Réseau MTN Francophone

Veille scientifique
Maladies tropicales négligées

Semaine 34
21 au 27 août 2023

Cysticercose

Scientific literature on neglected tropical diseases: a bibliometric analysis.

Tebano G, Vanino E, Muratori P, Cristini F.
22-08-2023
Pathog Glob Health.
https://pubmed.ncbi.nlm.nih.gov/37606248/

Neglected tropical diseases (NTDs) are a group of diseases mainly affecting people in low- and middle-income Countries. The aim of this study was to perform a bibliometric analysis of the scientific literature on NTDs. Using the MeSH database, we quantified the number of publications on MEDLINE targeting each NTD, which were published from 1 January 1999 to 31 January 2019. In order to weight the number of publications targeting a given NTD according to the total number of publications/year, we calculated a Yearly Publication Index (YPI) for each NTD/year. Linear regression was used to determine if there was a significant increase or decrease of YPI over time. In order to weight the number of publications according to disease burden (expressed in Disability-adjusted life years - DALYs) we calculated a DALYs-weighted Publication Index (DWPI) for each NTD. The highest absolute number of publications focused on leishmaniasis, dengue and Chagas disease; the lowest on tungiasis, dracunculiasis, chromoblastomycosis and yaws. The number of publications significantly increased for chikungunya, chromoblastomycosis, dengue, leishmaniasis, snakebite envenoming, and yaws. It significantly decreased for ascariasis, cysticercosis, echinococcosis, leprosy, lymphatic filariasis, mycetoma, onchocerciasis. Leprosy had the highest DWPI (i.e. the highest number of publication considering the burden of disease), followed by Chagas disease; lymphatic filariasis had the lowest, followed by onchocerciasis. Overall, lymphatic filariasis, onchocerciasis and ascariasis presented the worst scenario, with both very few publications compared with their disease burden and a decreasing number of publications.

RWC Update: Subretinal Cysticercosis; Pars Plana Vitrectomy for Proliferative Diabetic Retinopathy; Waardenburg Syndrome With Pseudo-Choroidal Melanocytosis.

Sharma A, Wu L, Bloom S, Stanga P, Nehemy MB, Misra DK, Berrocal MH, Acaba-Berrocal L, Calvão-Santos G, Sousa K, Rezaei KA.
Août-2023
Ophthalmic Surg Lasers Imaging Retina.
https://pubmed.ncbi.nlm.nih.gov/37603785/

Prevalence of cysticercosis in cattle slaughterhouses in the western region of Minas Gerais, Brazil (2013-2020): Influence of sanitary regulations in reducing risks to human health.

de Freitas WD, de Souza MVP, Costa LRM, Carrazza LG, de Fátima Carrijo K, de Melo RT, Cossi MVC.
16-08-2023
Prev Vet Med.
https://pubmed.ncbi.nlm.nih.gov/37597305/

Community knowledge, attitudes and practices related to Taenia solium taeniosis and cysticercosis in Zambia.

Zulu G, Mwape KE, Welte TM, Simuunza MC, Hachangu A, Mutale W,

Chembensofu M, Sikasunge CS, Phiri IK, Winkler AS.
10-08-2023
PLoS Negl Trop Dis.
https://pubmed.ncbi.nlm.nih.gov/37561784/

Background: Several studies on Taenia solium taeniosis / cysticercosis (TSTC) have been conducted in Zambia. However, none has assessed community knowledge, attitudes and practices related to TSTC and epilepsy. Methods: A community-based cross-sectional study was conducted between November and December 2022. The design consisted of a questionnaire-based survey conducted in each of the 25 purposely selected villages in Chiparamba Rural Health Centre (RHC) catchment area in Chipata district of the Eastern Province. Results: A total of 588 participants comprising 259 (44%) males and 329 (56%) females with median age of 42 years (range 17 to 92 years) were interviewed. Awareness of the signs and symptoms of taeniosis and human cysticercosis (HCC), including transmission and prevention measures was very low. Whilst the majority had heard about epilepsy, they were not able to link HCC to epilepsy. Most participants were aware of cysticerci in pigs (PCC) including its predilection sites but were not aware of mode of transmission and prevention measures. The pork meat inspection by trained professionals was also not a common practice in the area. Risk perception of T. solium infections was thus very low. Overall knowledge, attitude and practice scores related to T. solium infections and to epilepsy were very low with median scores of 0.38 (IQR 0.25-0.54) for knowledge, 0.25 (0.25-0.50) for attitudes, and 0.31 (0.25-0.44) for practices. Males had better knowledge on TSTC (median = 0.42, p = 0.017, r = 0.098) and better practice scores (median = 0.38, p = < 0.001, r = 0.154) compared to females though the effect size was small. With regards to sanitation and hygiene washing with soap and water was reported by many but only few had a hand washing facility near their latrines. Conclusion: The study shows overall poor knowledge, attitudes and practices related to TSTC among the community of Chiparamba RHC in Chipata district of the Eastern Province of Zambia. This poses a serious challenge for control and elimination of T. solium infections and thus efforts to improve knowledge, attitudes and practices should be made using a One Health approach for the control and elimination of TSTC. Educational programs about TSTC transmission, signs and symptoms, prevention, management and control need to be scaled up in the study area and Zambia as a whole.

Confirmation by necropsy of a high prevalence of porcine cysticercosis in a rural district of Madagascar.

Mananjara DEA, Rakotoarinoro M, Rakotoarison VC, Raliniaina M, Razafindraibe NP, Ravonirina C, Randriamparany T, Rasamoelina-Andriamanivo H, Rakotozandrindrainy R, Cardinale E, Lightowlers MW, Donadeu M, Mwape KE.
Août-2023
Parasitology.
https://pubmed.ncbi.nlm.nih.gov/37496390/

Monetary burden of neurocysticercosis on a hospitalized population in Muli County, China.

Mosley IA, Li T, Zhao X, Huang L, Chen X, Liu Y, Chen Z, Duan M, Budke CM.
Oct-2023
Acta Trop.
https://pubmed.ncbi.nlm.nih.gov/37453578/

Neurocysticercosis (NCC) is a potentially life-threatening condition caused by the zoonotic cestode, Taenia solium. Pigs are the typical intermediate hosts for T. solium but humans can become infected and develop NCC upon ingesting parasite eggs that are shed in the feces of an infected person. The objective of this study was to estimate the monetary burden of neurocysticercosis (NCC) on hospitalized patients from Muli County, China. Muli is an agricultural county in Liangshan Prefecture, Sichuan Province, China where pigs are raised and the zoonotic cestode, Taenia solium, is endemic. Demographic and treatment data were collected from the Muli County Health Insurance Department on hospitalized individuals with an NCC diagnosis between 2014 and 2021. These patients represent residents of Muli County that purchased health insurance and received treatment in a public hospital in Sichuan Province. Hospital costs were converted from Chinese renminbi (RMB) to United States dollars (US$) for month and year of hospitalization and adjusted for inflation. Individuals with missing hospital information were excluded from analysis. For indirect costs, annual average salary for Liangshan Prefecture working-age adults was obtained to calculate productivity losses based on number of hospitalization days and travel days to and from the hospital. Transportation costs were evaluated based on estimated bus fare to and from the hospital. Out of 70 patients identified from 2014 to 2021, 68 had complete records, of which 47.1% were male (n = 33) and the median age at first hospitalization was 34 years. Total estimated cost for these patients was US$228,341.98. Direct costs contributed 62.5% (US$142,785.25) and indirect costs were 37.5% (US$85,556.73) of the total cost. The estimated median cost per case was US$2,078.69. Individuals with a single hospitalization (n = 41) cost a median of US$1,572.03 and those with multiple hospitalizations (n = 27) cost a median of US$4,169.95. The median total cost per NCC case was 18.6% of the average wage for a Liangshan Prefecture resident in 2021. While the study was limited to those with insurance coverage, monetary burden on the local population is likely substantial. Public health policies aimed at reducing transmission should be implemented to decrease the economic burden of NCC on this region.

Atypical Presentations of Extraparenchymal Neurocysticercosis.

Fan J, Tang R, Zhang L, Hoang PT, Ayoade F, Diaz-Perez JA, Moss HE, Jiang H.
01-09-2023
J Neuroophthalmol.
https://pubmed.ncbi.nlm.nih.gov/36637411/

Background: Neurocysticercosis (NCC) is the most common parasitic infection of the central nervous system and is typically diagnosed through visualization of the cysts in the cerebral parenchyma by neuro-imaging. However, neuro-imaging may not detect extraparenchymal neurocysticercosis (EPNCC), which is a rare manifestation of the disease involving the subarachnoid, meningeal, and intraventricular spaces. We report 2 cases of extraparenchymal neurocysticercosis, and discuss the diagnostic challenges and management of this entity. Methods: Two cases were identified through clinical records. Results: Both patients had an insidious onset with slow progression of disease, and presented with papilledema and cerebrospinal fluid (CSF) eosinophilia. One case was diagnosed with spinal cord biopsy. The other was diagnosed with CSF serology and next-generation sequencing-based pathogen analysis. Both patients were treated with ventriculoperitoneal shunt, systemic antiparasitic agents, and immunosuppression. Conclusions: EPNCC is less common than parenchymal NCC. A high level of clinical suspicion is required given its rarity, long incubation period, and slow progression. Diagnosis and treatment can be challenging and requires a multidisciplinary approach.

Dengue, chikungunya et maladie à virus Zika

Actomyosin dependent cell contractility orchestrates zika virus infection.

Huang X, Xing Y, Cui Y, Ji B, Ding B, Zhong J, Jiu Y.
25-08-2023
J Cell Sci.
https://pubmed.ncbi.nlm.nih.gov/37622381/

Emerging pathogen infections such as Zika virus (ZIKV) pose an increasing threat to human health, but the role of mechanobiological attribute of host cells during ZIKV infection is largely unknown. Here, we revealed that ZIKV infection led to increased contractility of host cells. Importantly, we investigated whether host cell contractility contributes to ZIKV infection efficacy, from both intracellular and extracellular perspective. By performing drug perturbation and gene editing experiments, we confirmed that disruption of contractile actomyosin compromises ZIKV infection efficiency, viral genome replication and viral particle production. By culturing on compliant matrix, we further demonstrated that softer substrate leading to less contractility of host cells compromises ZIKV infection, resemble of disrupting the intracellular actomyosin organization. Together, our

work provides evidence to support a positive correlation between host cell contractility and ZIKV infection efficacy, thus unveiling an unprecedented layer of interplay between ZIKV and host cell.

The dengue virus NS1 protein; new roles in pathogenesis due to similarities with and affinity for the high-density lipoprotein (HDL)?

Alcalá AC, Ludert JE.
24-08-2023
PLoS Pathog.
https://pubmed.ncbi.nlm.nih.gov/37616216/

West Nile Virus and Other Nationally Notifiable Arboviral Diseases - United States, 2021.

Fagre AC, Lyons S, Staples JE, Lindsey N.
25-08-2023
MMWR Morb Mortal Wkly Rep.
https://pubmed.ncbi.nlm.nih.gov/37616182/

Plasmapheresis in Acute Necrotizing Encephalopathy of Childhood Secondary to Dengue.

Sekhar JC, Rajitha B, Nagaraju C, Singh S, Sahni A, Lamba DS, Hans R, Vyas S, Angurana SK.
24-08-2023
Indian J Pediatr.
https://pubmed.ncbi.nlm.nih.gov/37615825/

Predicting the dengue cluster outbreak dynamics in Yogyakarta, Indonesia: a modelling study.

Ramadona AL, Tozan Y, Wallin J, Lazuardi L, Utarini A, Rocklöv J.
11-05-2023
Lancet Reg Health Southeast Asia.
https://pubmed.ncbi.nlm.nih.gov/37614350/

Background: Human mobility and climate conditions are recognised key drivers of dengue transmission, but their combined and individual role in the local spatiotemporal clustering of dengue cases is not well understood. This study investigated the effects of human mobility and weather conditions on dengue risk in an urban area in Yogyakarta, Indonesia. Methods: We established a Bayesian spatiotemporal model for neighbourhood outbreak prediction and evaluated the performances of two different approaches for constructing an adjacency matrix: one based on geographical proximity and the other based on human mobility patterns. We used population, weather conditions, and past dengue cases as predictors using a flexible distributed lag approach. The human mobility data were estimated based on proxies from social media. Unseen data from February 2017 to January 2020 were used to estimate the one-month ahead prediction accuracy of the model. Findings: When human mobility proxies were included in the spatial covariance structure, the model fit improved in terms of the log score (from 1.748 to 1.561) and the mean absolute error (from 0.676 to 0.522) based on the validation data. Additionally, showed only few observations outside the credible interval of predictions (1.48%) and weather conditions were not found to contribute additionally to the clustering of cases at this scale. Interpretation: The study shows that it is possible to make highly accurate predictions of the within-city cluster dynamics of dengue using mobility proxies from social media combined with disease surveillance data. These insights are important for proactive and timely outbreak management of dengue. Funding: Swedish Research Council Formas, Umeå Centre for Global Health Research, Swedish Council for Working Life and Social Research, Swedish research council VINNOVA and Alexander von Humboldt Foundation (Germany).

Descriptive and comparative analysis of mucocutaneous manifestations in patients with dengue fever: a prospective study.

Fera C, Maillard O, Joly E, Diallo K, Mavingui P, Koumar Y, Cabié A, Bertolotti A.
23-08-2023
J Eur Acad Dermatol Venereol.
https://pubmed.ncbi.nlm.nih.gov/37611258/

Multiplexed Biosensing of Proteins and Virions with Disposable Plasmonic Assays.

Wallace S, Kartau M, Kakkar T, Davis C, Szemiel A, Samardzhieva I, Vijayakrishnan S, Cole S, De Lorenzo G, Maillart E, Gautier K, Lapthorn AJ, Patel AH, Gadegaard N, Kadodwala M, Hutchinson E, Karimullah AS.
23-08-2023
ACS Sens.
https://pubmed.ncbi.nlm.nih.gov/37610841/

Our growing ability to tailor healthcare to the needs of individuals has the potential to transform clinical treatment. However, the measurement of multiple biomarkers to inform clinical decisions requires rapid, effective, and affordable diagnostics. Chronic diseases and rapidly evolving pathogens in a larger population have also escalated the need for improved diagnostic capabilities. Current chemical diagnostics are often performed in centralized facilities and are still dependent on multiple steps, molecular labeling, and detailed analysis, causing the result turnaround time to be over hours and days. Rapid diagnostic kits based on lateral flow devices can return results quickly but are only capable of detecting a handful of pathogens or markers. Herein, we present the use of disposable plasmonics with chiroptical nanostructures as a platform for low-cost, label-free optical biosensing with multiplexing and without the need for flow systems often required in current optical biosensors. We showcase the detection of SARS-CoV-2 in complex media as well as an assay for the Norovirus and Zika virus as an early developmental milestone toward high-throughput, single-step diagnostic kits for differential diagnosis of multiple respiratory viruses and any other emerging diagnostic needs. Diagnostics based on this platform, which we term "disposable plasmonics assays,"

would be suitable for low-cost screening of multiple pathogens or biomarkers in a near-point-of-care setting.

Measuring dengue illness intensity: Development and content validity of the dengue virus daily diary (DENV-DD).

Jones AM, Saretsky TL, Panter C, Wells JR, White F, Smith V, Kendal H, Russell K, Ruggieri M, Calhoun SR, Gater A, O'Hagan J, Anderson KB, Paz-Soldan VA, Morrison AC, Ware L, Klick M, Thomas S, Marks MA.
23-08-2023
J Patient Rep Outcomes.
https://pubmed.ncbi.nlm.nih.gov/37610665/

Background: Dengue is the most prevalent arboviral infection causing an estimated 50-60 million cases of febrile illness globally per year, exacting considerable disease burden. Few instruments exist to assess the patient illness experience, with most based on healthcare provider assessment, lacking standardization in timepoints and symptom assessment. This study aimed to evaluate the content validity of the novel 'Dengue Virus Daily Diary (DENV-DD)', designed to measure symptom intensity and disease burden within outpatient infant to adult populations. Methods: The Dengue Illness Index Report Card was used as a foundation to create the DENV-DD, consisting of patient- and observer-reported outcome (PRO/ObsRO) instruments. In two South American dengue-endemic communities, qualitative combined concept elicitation and cognitive debriefing interviews were conducted among individuals and caregivers of children with symptomatic laboratory-confirmed dengue. Interviews were conducted across two rounds allowing DENV-DD modifications. A small-scale quantitative assessment of the DENV-DD was also conducted with data from an independent Dengue Human Infection Model (DHIM) to generate early evidence of feasibility of DENV-DD completion, instrument performance and insight into the sign/symptom trajectory over the course of illness. Results: Forty-eight participants were interviewed (20 adults, 20 older children/adolescents with their caregivers, 8 caregivers of younger children). A wide spectrum of signs/symptoms lasting 3-15 days were reported with fever, headache, body ache/pain, loss of appetite, and body weakness each reported by > 70% participants. DENV-DD instructions, items and response scales were understood, and items were considered relevant across ages. DHIM data supported feasibility of DENV-DD completion. Conclusions: Findings demonstrate content validity of the DENV-DD (PRO/ObsRO instruments) in dengue-endemic populations. Psychometric and cultural validity studies are ongoing to support use of the DENV-DD in clinical studies. Keywords: Clinical outcome assessment (COA); Cognitive debriefing; Concept elicitation; Dengue; Dengue human infection model (DHIM); Observer-reported outcome (ObsRO); Patient-reported outcome (PRO); Qualitative; Quantitative.

The Impact of COVID-19 Pandemic on Arthropod-Related Diseases.

Moin-Vaziri V, Badakhshan M.
31-03-2023
J Arthropod Borne Dis.
https://pubmed.ncbi.nlm.nih.gov/37609568/

Worldwide Status of Insecticide Resistance of Aedes aegypti and Ae. albopictus, Vectors of Arboviruses of Chikungunya, Dengue, Zika and Yellow Fever.

Asgarian TS, Vatandoost H, Hanafi-Bojd AA, Nikpoor F.
31-03-2023
J Arthropod Borne Dis.
https://pubmed.ncbi.nlm.nih.gov/37609563/

Chikungunya virus antepartum transmission and abnormal infant outcomes in Nigeria.

Sagay AS, Hsieh SC, Dai YC, Chang CA, Ogwuche J, Ige OO, Kahansim ML, Chaplin B, Imade G, Elujoba M, Paul M, Hamel DJ, Furuya H, Khoury R, Boaventura VS, de Moraes L, Kanki PJ, Wang WK.
09-08-2023
medRxiv.
https://pubmed.ncbi.nlm.nih.gov/37609297/

Chikungunya virus (CHIKV) has become a global public health concern since the reemergence of the Indian Ocean lineage and expansion of the Asian genotype. CHIKV infection causes acute febrile illness, rash, and arthralgia and during pregnancy may affect both mothers and infants. The mother-to-child transmission (MTCT) of CHIKV in Africa remains understudied. We screened 1006 pregnant women at two clinics in Nigeria between 2019 and 2022 and investigated the prevalence and MTCT of CHIKV. Of the 1006, 119 tested positive for CHIKV IgM, of which 36 underwent detailed laboratory tests. While none of the IgM reactive samples were RT-PCR positive, 14 symptomatic pregnant women were confirmed by CHIKV neutralization test. Twelve babies were followed with 8 normal and 4 abnormal outcomes, including stillbirth, cleft lip/palate with microcephaly, preterm delivery, polydactyly with sepsis and jaundice. CHIKV IgM testing identified 3 antepartum transmissions, further studies will determine its impact in antepartum infection.

Integration of population-level data sources into an individual-level clinical prediction model for dengue virus test positivity.

Williams RJ, Brintz BJ, Dos Santos GR, Huang A, Buddhari D, Kaewhiran S, Iamsirithaworn S, Rothman AL, Thomas S, Farmer A, Fernandez S, Cummings DAT, Anderson KB, Salje H, Leung DT.
13-08-2023
medRxiv.
https://pubmed.ncbi.nlm.nih.gov/37609267/

Arbovirus surveillance in pregnant women in north-central Nigeria, 2019-2022.

Ogwuche J, Chang CA, Ige O, Sagay AS, Chaplin B, Kahansim ML, Paul M, Elujoba M, Imade G, Kweashi G, Dai YC, Hsieh SC, Wang WK, Hamel DJ, Kanki PJ.
08-08-2023
medRxiv.
https://pubmed.ncbi.nlm.nih.gov/37609234/

The adverse impact of Zika (ZIKV), dengue (DENV), and chikungunya (CHIKV) virus infection in pregnancy has been recognized in Latin America and Asia but is not well studied in Africa. In Nigeria, we screened 1006 pregnant women for ZIKV, DENV and CHIKV IgM/IgG by rapid test (2019-2022). Women with acute infection were recruited for prospective study and infants were examined for any abnormalities from delivery through six months. A subset of rapid test-reactive samples were confirmed using virus-specific ELISAs and neutralization assays. Prevalence of acute infection (IgM+) was 3.8%, 9.9% and 11.8% for ZIKV, DENV and CHIKV, respectively; co-infections represented 24.5% of all infections. Prevalence in asymptomatic women was twice the level of symptomatic infection. We found a significant association between acute maternal ZIKV/DENV/CHIKV infection and any gross abnormal birth outcome (p=0.014). Further prospective studies will contribute to our understanding of the clinical significance of these endemic arboviruses in Africa.

Phagocyte-expressed glycosaminoglycans promote capture of alphaviruses from the blood circulation in a host species-specific manner.

Ander SE, Parks MG, Davenport BJ, Li FS, Bosco-Lauth A, Carpentier KS, Sun C, Lucas CJ, Klimstra WB, Ebel GD, Morrison TE.
09-08-2023
bioRxiv.
https://pubmed.ncbi.nlm.nih.gov/37609165/

The magnitude and duration of vertebrate viremia are critical determinants of arbovirus transmission, geographic spread, and disease severity-yet, mechanisms determining arbovirus viremia levels are poorly defined. Previous studies have drawn associations between in vitro virion-glycosaminoglycan (GAG) interactions and in vivo clearance kinetics of virions from blood circulation. From these observations, it is commonly hypothesized that GAG-binding virions are rapidly removed from circulation due to ubiquitous expression of GAGs by vascular endothelial cells, thereby limiting viremia. Using an in vivo model for viremia, we compared the vascular clearance of low and enhanced GAG-binding viral variants of chikungunya (CHIKV), eastern-(EEEV), and Venezuelan-(VEEV) equine encephalitis viruses. We find GAG-binding virions are more quickly removed from circulation than their non-GAG-binding variant; however individual clearance kinetics vary between GAG-binding viruses, from swift (VEEV) to slow removal from circulation (EEEV). Remarkably, we find phagocytes are required for efficient vascular clearance of some enhanced GAG-binding virions. Moreover, transient depletion of vascular heparan sulfate (HS) impedes vascular clearance of only some GAG-binding viral variants and in a phagocyte-dependent manner, implying phagocytes can mediate vascular GAG-virion interactions. Finally, in direct contrast to mice, we find enhanced GAG-binding EEEV is resistant to vascular clearance in avian hosts, suggesting the existence of species-specificity in virion-GAG interactions. In summary, these data support a role for GAG-mediated clearance of some viral particles from the blood circulation, illuminate the potential of blood-contacting phagocytes as a site for GAG-virion binding, and suggest a role for species-specific GAG structures in arbovirus ecology. **Significance statement:** Previously, evidence of arbovirus-GAG interactions in vivo has been limited to associations between viral residues shown to promote enhanced GAG-binding phenotypes in vitro and in vivo phenotypes of viral dissemination and pathogenesis. By directly manipulating host GAG expression, we identified virion-GAG interactions in vivo and discovered a role for phagocyte-expressed GAGs in viral vascular clearance. Moreover, we observe species-specific differences in viral vascular clearance of enhanced GAG-binding virions between murine and avian hosts. These data suggest species-specific variation in GAG structure is a mechanism to distinguish amplifying from dead-end hosts for arbovirus transmission.

New insight into flavivirus maturation from structure/function studies of the yellow fever virus envelope protein complex.

Crampon E, Covernton E, Vaney MC, Dellarole M, Sommer S, Sharma A, Haouz A, England P, Lepault J, Duquerroy S, Rey FA, Barba-Spaeth G.
21-08-2023
mBio.
https://pubmed.ncbi.nlm.nih.gov/37607061/

Scientific literature on neglected tropical diseases: a bibliometric analysis.

Tebano G, Vanino E, Muratori P, Cristini F.
22-08-2023
Pathog Glob Health.
https://pubmed.ncbi.nlm.nih.gov/37606248/

Neglected tropical diseases (NTDs) are a group of diseases mainly affecting people in low- and middle-income Countries. The aim of this study was to perform a bibliometric analysis of the scientific literature on NTDs. Using the MeSH database, we quantified the number of publications on MEDLINE targeting each NTD, which were published from 1 January 1999 to 31 January 2019. In order to weight the number of publications targeting a given NTD according to the total number of publications/year, we calculated a Yearly Publication Index (YPI) for each NTD/year. Linear regression was used to determine if there was a significant increase or decrease of YPI over time. In order to weight the number of publications according to disease burden (expressed in Disability-adjusted life years - DALYs) we calculated a DALYs-weighted Publication Index (DWPI) for each NTD. The highest absolute number of publications focused on leishmaniasis, dengue and Chagas disease; the lowest on tungiasis, dracunculiasis, chromoblastomycosis and yaws. The number of publications significantly increased for chikungunya, chromoblastomycosis, dengue,

leishmaniasis, snakebite envenoming, and yaws. It significantly decreased for ascariasis, cysticercosis, echinococcosis, leprosy, lymphatic filariasis, mycetoma, onchocerciasis. Leprosy had the highest DWPI (i.e. the highest number of publication considering the burden of disease), followed by Chagas disease; lymphatic filariasis had the lowest, followed by onchocerciasis. Overall, lymphatic filariasis, onchocerciasis and ascariasis presented the worst scenario, with both very few publications compared with their disease burden and a decreasing number of publications.

Dengue beyond fever-fatal dengue myocarditis and complete heart block: A case report and brief overview of cardiac manifestations of dengue fever.

Khan AA, Khan FU, Akhtar SA, Ghaffar R.
19-08-2023
SAGE Open Med Case Rep.
https://pubmed.ncbi.nlm.nih.gov/37605746/

Quality of Life and Disability in Chikungunya Arthritis.

Amaral JK, Taylor PC, Weinblatt ME, Bandeira Í, Schoen RT.
15-08-2023
Curr Rheumatol Rev.
https://pubmed.ncbi.nlm.nih.gov/37605393/

wMel Wolbachia alters female post-mating behaviors and physiology in the dengue vector mosquito Aedes aegypti.

Osorio J, Villa-Arias S, Camargo C, Ramírez-Sánchez LF, Barrientos LM, Bedoya C, Rúa-Uribe G, Dorus S, Alfonso-Parra C, Avila FW.
21-08-2023
Commun Biol.
https://pubmed.ncbi.nlm.nih.gov/37604924/

Globally invasive Aedes aegypti disseminate numerous arboviruses that impact human health. One promising method to control Ae. aegypti populations is transinfection with Wolbachia pipientis, which naturally infects ~40-52% of insects but not Ae. aegypti. Transinfection of Ae. aegypti with the wMel Wolbachia strain induces cytoplasmic incompatibility (CI), allows infected individuals to invade native populations, and inhibits transmission of medically relevant arboviruses by females. Female insects undergo post-mating physiological and behavioral changes-referred to as the female post-mating response (PMR)-required for optimal fertility. PMRs are typically elicited by male seminal fluid proteins (SFPs) transferred with sperm during mating but can be modified by other factors, including microbiome composition. Wolbachia has modest effects on Ae. aegypti fertility, but its influence on other PMRs is unknown. Here, we show that Wolbachia influences female fecundity, fertility, and re-mating incidence and significantly extends the longevity of virgin females. Using proteomic methods to examine the seminal proteome of infected males, we found that Wolbachia moderately affects SFP composition. However, we identified 125 paternally transferred Wolbachia proteins, but the CI factor proteins (Cifs) were not among them. Our findings indicate that Wolbachia infection of Ae. aegypti alters female PMRs, potentially influencing control programs that utilize Wolbachia-infected individuals.

In-hospital mortality predictors among hospitalized adults and those with chronic kidney disease with dengue.

Lee IK, Lee NY, Huang WC, Hsu JC, Tai CH, Yang CH, Huang CH, Lin CY, Chang K, Chen YH.
09-08-2023
J Microbiol Immunol Infect.
https://pubmed.ncbi.nlm.nih.gov/37604758/

Background: Accurately identifying risk factors that predict fatality in dengue is crucial for patient triage and clinical management. Our objective was to identify predictors of death associated with dengue and investigate the clinical characteristics and risk factors among patients with chronic kidney disease (CKD) who died from dengue. Methods: A multicenter longitudinal observation study conducted from 2008 to 2019. Results: A total of 1272 patients (113 who died and 1186 who recovered) diagnosed with dengue were included. Old age, CKD, and an elevated white blood cell count at hospital presentation were identified as independent predictors of in-hospital mortality among individuals infected with the dengue virus. In a subgroup analysis of 138 patients with CKD infected with dengue virus, 64 (46.3%) patients died, with 46 (33.3%) patients dying within 7 days after symptom onset. Among 64 fatal dengue patients with CKD, 34.4% were in stages 2 and 3 of kidney disease, 51.5% were in stages 4 and 5, and 14.1% had end stage renal disease as per the classification by Kidney Disease Improving Global Outcomes. Multivariate analysis revealed that initial altered consciousness, pulmonary edema, and leukocytosis during hospitalization were independently associated with in-hospital mortality in CKD patients infected with the dengue virus. Leukocytosis during hospitalization and severe hepatitis were independent risk factors for death within 7 days after dengue illness onset in CKD patients. Conclusions: This study offers valuable insights into predictors linked to fatality in dengue and reinforces the importance of optimizing patient triage to improve the quality of care.

Multisystem Failure in Fatal Dengue: Associations between the Infectious Viral Serotype and Clinical and Histopathological Findings.

Rivera J, Rengifo AC, Alvarez-Díaz D, Parra E, Usme-Ciro J, Castellanos J, Velandia M, Laiton-Donato K, Rico A, Pardo L, Caldas ML.
21-08-2023
Am J Trop Med Hyg.
https://pubmed.ncbi.nlm.nih.gov/37604466/

Dengue is the most important arthropod-borne viral infection of humans. However, its viral pathogenesis is still unknown. The information collected from dengue fatal cases is crucial for understanding the complex interactions between virulence and host factors. This study aimed to

establish possible associations between the clinical characteristics, histopathological changes, replication, and tissue location of viral serotypes in dengue fatal cases. Clinical and histopathological characterizations, antigen localization in tissue, and detection of the infecting serotype and replication using real-time polymerase chain reaction were all performed on the dengue fatal cases. The majority of the cases involved people under the age of 20. Bleeding (48.3%), abdominal pain (44.8%), myalgia (52.9%), and headache (48.3%) were the most common clinical manifestations in the cases. There was multiorgan pathology, with histopathological changes primarily in the liver, spleen, and lung. Similarly, the viral antigen was found primarily in these organs; however, there were no associations between tissue changes, viral location, infecting serotypes, and replication processes. Dengue infection should be considered a multiorgan disease, the outcome of which is possibly not associated with the infecting viral serotype.

When does humoral memory enhance infection?

Nikas A, Ahmed H, Moore MR, Zarnitsyna VI, Antia R.
21-08-2023
PLoS Comput Biol.
https://pubmed.ncbi.nlm.nih.gov/37603552/

Fundamental neurochemistry review: Glutamatergic dysfunction as a central mechanism underlying flavivirus-induced neurological damage.

Nogueira CO, Rocha T, Messor DF, Souza INO, Clarke JR.
21-08-2023
J Neurochem.
https://pubmed.ncbi.nlm.nih.gov/37603368/

The impact of predators of mosquito larvae on Wolbachia spreading dynamics.

Zhu Z, Hui Y, Hu L.
Déc-2023
J Biol Dyn.
https://pubmed.ncbi.nlm.nih.gov/37603352/

Dengue fever creates more than 390 million cases worldwide yearly. The most effective way to deal with this mosquito-borne disease is to control the vectors. In this work we consider two weapons, the endosymbiotic bacteria *Wolbachia* and predators of mosquito larvae, for combating the disease. As *Wolbachia*-infected mosquitoes are less able to transmit dengue virus, releasing infected mosquitoes to invade wild mosquito populations helps to reduce dengue transmission. Besides this measure, the introduction of predators of mosquito larvae can control mosquito population. To evaluate the impact of the predators on *Wolbachia* spreading dynamics, we develop a stage-structured five-dimensional model, which links the predator-prey dynamics with the *Wolbachia* spreading. By comparatively analysing the dynamics of the models without and with predators, we observe that the introduction of the predators augments the number of coexistence equilibria and impedes *Wolbachia* spreading. Some numerical simulations are presented to support and expand our theoretical results.

Genetic Characterization of the Dengue Virus Type 3 Genotype I Prevailing in Dhaka, Bangladesh, 2021.

Jahan A, Paul SK, Nasreen SA, Haque N, Roy S, Sultana M, Hossain T, Nila SS, Ahmad FU, Ahmed S, Aung MS, Kobayashi N.
21-08-2023
Vector Borne Zoonotic Dis.
https://pubmed.ncbi.nlm.nih.gov/37603293/

Determining the relationship between dengue and vulnerability in a Brazilian city: a spatial modeling analysis.

Bohm BC, Morais MHF, Cunha MDCM, Bruhn NCP, Caiaffa WT, Bruhn FRP.
21-08-2023
Pathog Glob Health.
https://pubmed.ncbi.nlm.nih.gov/37602571/

Secondary Hemophagocytic Lymphohistiocytosis Due to Typhoid Fever.

Shekhar S, Radhakrishnan R, Nagar VS.
20-07-2023
Cureus.
https://pubmed.ncbi.nlm.nih.gov/37602057/

Hemophagocytic lymphohistiocytosis (HLH) is a potentially fatal hyper-inflammatory state that is caused by a highly activated but ineffective immune system. It can be primary or secondary to triggers like infections, malignancies, and autoimmune conditions. The authors present the case of a young male with a fever and abdominal pain due to typhoid. He continued to have a high-spiking fever and developed dyspnea, requiring oxygen therapy despite being treated with appropriate antibiotics. Laboratory evaluation revealed cytopenias and deranged liver function tests, and abdominal imaging revealed hepatosplenomegaly. These clinical and laboratory findings raised suspicion of HLH secondary to typhoid fever. Further investigations were suggestive of hyperferritinemia and hypofibrinogenemia, and bone marrow aspirates showed hemophagocytes. The patient was treated with immunosuppression (dexamethasone) and antibiotics and showed remarkable recovery. Hemophagocytic lymphohistiocytosis should be suspected in patients with tropical infections like enteric fever, tuberculosis, malaria, dengue, etc. that worsen despite appropriate treatment, as late diagnosis is associated with greater mortality.

Recombinant protein based on domain III and capsid regions of zika virus induces humoral and cellular immune response in immunocompetent BALB/c mice.

Valdes I, Gil L, Lazo L, Cobas K, Romero Y, Bruno A, Suzarte E, Pérez Y, Cabrales A, Ramos Y, Hermida L, Guillén G.
18-08-2023
Vaccine.
https://pubmed.ncbi.nlm.nih.gov/37599141/

Zika virus infection continues to be a global concern for human health due to the high-risk association of the disease with neurological disorders and microcephaly in newborn. Nowadays, no vaccine or specific antiviral treatment is available, and the development of safe and effective vaccines is yet a challenge. In this study, we obtained a novel subunit vaccine that combines two regions of zika genome, domain III of the envelope and the capsid, in a chimeric protein in E. coli bacteria. The recombinant protein was characterized with polyclonal anti-ZIKV and anti-DENV antibodies that corroborate the specificity of the molecule. In addition, the PBMC from zika-immune donors stimulated with the ZEC recombinant antigen showed the capacity to recall the memory T cell response previously generated by the natural infection. The chimeric protein ZEC was able to self-assemble after combination with an immunomodulatory specific oligonucleotide to form aggregates. The inoculation of BALB/c mice with ZEC aggregated and not aggregated form of the protein showed a similar humoral immune response, although the aggregated variant induced more cell-mediated immunity evaluated by in vitro IFNγ secretion. In this study, we propose a novel vaccine candidate against the zika disease based on a recombinant protein that can stimulate both arms of the immune system.

Zika virus co-opts miRNA networks to persist in placental niches detected by spatial transcriptomics.

Barrozo ER, Seferovic MD, Hamilton MP, Moorshead DN, Jochum MD, Do T, O'Neil DS, Suter MA, Aagaard KM.
18-08-2023
Am J Obstet Gynecol.
https://pubmed.ncbi.nlm.nih.gov/37598997/

Correction to: Comparative phylogenetic analysis and transcriptomic profiling of dengue (DENV-3 genotype I) outbreak in 2021 in Bangladesh.

Sarkar MMH, Rahman MS, Rafiul M, Rahman A, Islam MS, Banu TA, Akter S, Goswami B, Jahan I, Habib MA, Uddin MM, Mia MZ, Miah MI, Shaikh MAA, Khan MS.
18-08-2023
Virol J.
https://pubmed.ncbi.nlm.nih.gov/37596600/

Molecular surveillance of arboviruses in Nigeria.

Shaibu JO, Akinyemi KO, Uzor OH, Audu RA, Bola Oriowo Oyefolu A.
18-08-2023
BMC Infect Dis.
https://pubmed.ncbi.nlm.nih.gov/37596550/

Strategic considerations on developing a CHIKV vaccine and ensuring equitable access for countries in need.

Cherian N, Bettis A, Deol A, Kumar A, Di Fabio JL, Chaudhari A, Yimer S, Fahim R, Endy T.
18-08-2023
NPJ Vaccines.
https://pubmed.ncbi.nlm.nih.gov/37596253/

Language skills development in children with congenital Zika virus syndrome.

da Silva NC, Pinato L, Ribeiro EM, Giacheti CM.
09-08-2023
Early Hum Dev.
https://pubmed.ncbi.nlm.nih.gov/37595539/

Dengue overview: An updated systemic review.

Khan MB, Yang ZS, Lin CY, Hsu MC, Urbina AN, Assavalapsakul W, Wang WH, Chen YH, Wang SF.
03-08-2023
J Infect Public Health.
https://pubmed.ncbi.nlm.nih.gov/37595484/

Dengue is caused by the dengue virus (DENVs) infection and clinical manifestations include dengue fever (DF), dengue hemorrhagic fever (DHF), or dengue shock syndrome (DSS). Due to a lack of antiviral drugs and effective vaccines, several therapeutic and control strategies have been proposed. A systemic literature review was conducted according to PRISMA guidelines to select proper references to give an overview of DENV infection. Results indicate that understanding the virus characteristics and epidemiology are essential to gain the basic and clinical knowledge as well as dengue disseminated pattern and status. Different factors and mechanisms are thought to be involved in the presentation of DHF and DSS, including antibody-dependent enhancement, immune dysregulation, viral virulence, host genetic susceptibility, and preexisting dengue antibodies. This study suggests that dissecting pathogenesis and risk factors as well as developing different types of therapeutic and control strategies against DENV infection are urgently needed.

Peripheral nervous system is injured by neutrophil extracellular traps (NETs) elicited by nonstructural (NS) protein-1 from Zika virus.

de Siqueira Santos R, Rochael NC, Mattos TRF, Fallett E Silva MF, Linhares-Lacerda L, de Oliveira LT, Cunha MS, Mohana-Borges R, Gomes TA, Barbosa-Silva MC, Maron-Gutierrez T, Foguel D, Saraiva EM.
Sept-2023
FASEB J.
https://pubmed.ncbi.nlm.nih.gov/37594040/

The involvement of innate immune mediators to the Zika virus (ZIKV)-induced neuroinflammation is not yet well known. Here, we investigated whether neutrophil extracellular traps (NETs), which are scaffolds of DNA associated with proteins, have the potential to injure

peripheral nervous. The tissue lesions were evaluated after adding NETs to dorsal root ganglia (DRG) explants and to DRG constituent cells or injecting them into mouse sciatic nerves. Identification of NET harmful components was achieved by pharmacological inhibition of NET constituents. We found that ZIKV inoculation into sciatic nerves recruited neutrophils and elicited the production of the cytokines CXCL1 and IL-1β, classical NET inducers, but did not trigger NET formation. ZIKV blocked PMA- and CXCL8-induced NET release, but, in contrast, the ZIKV nonstructural protein (NS)-1 induced NET formation. NET-enriched supernatants were toxic to DRG explants, decreasing neurite area, length, and arborization. NETs were toxic to DRG constituent cells and affected myelinating cells. Myeloperoxidase (MPO) and histones were identified as the harmful component of NETs. NS1 injection into mouse sciatic nerves recruited neutrophils and triggered NET release and caspase-3 activation, events that were also elicited by the injection of purified MPO. In summary, we found that ZIKV NS1 protein induces NET formation, which causes nervous tissue damages. Our findings reveal new mechanisms leading to neuroinflammation by ZIKV.

Direct and indirect effects of age on dengue severity: The mediating role of secondary infection.

Annan E, Treviño J, Zhao B, Rodriguez-Morales AJ, Haque U.
09-08-2023
PLoS Negl Trop Dis.
https://pubmed.ncbi.nlm.nih.gov/37556473/

Vertical transmission of African-lineage Zika virus through the fetal membranes in a rhesus macaque (Macaca mulatta) model.

Koenig MR, Mitzey AM, Zeng X, Reyes L, Simmons HA, Morgan TK, Bohm EK, Pritchard JC, Schmidt JA, Ren E, Leyva Jaimes FB, Winston E, Basu P, Weiler AM, Friedrich TC, Aliota MT, Mohr EL, Golos TG.
07-08-2023
PLoS Pathog.
https://pubmed.ncbi.nlm.nih.gov/37549143/

Zika virus (ZIKV) can be transmitted vertically from mother to fetus during pregnancy, resulting in a range of outcomes including severe birth defects and fetal/infant death. Potential pathways of vertical transmission in utero have been proposed but remain undefined. Identifying the timing and routes of vertical transmission of ZIKV may help us identify when interventions would be most effective. Furthermore, understanding what barriers ZIKV overcomes to effect vertical transmission may help improve models for evaluating infection by other pathogens during pregnancy. To determine the pathways of vertical transmission, we inoculated 12 pregnant rhesus macaques with an African-lineage ZIKV at gestational day 30 (term is 165 days). Eight pregnancies were surgically terminated at either seven or 14 days post-maternal infection. Maternal-fetal interface and fetal tissues and fluids were collected and evaluated for ZIKV using RT-qPCR, in situ hybridization, immunohistochemistry, and plaque assays. Four additional pregnant macaques were inoculated and terminally perfused with 4% paraformaldehyde at three, six, nine, or ten days post-maternal inoculation. For these four cases, the entire fixed pregnant uterus was evaluated with in situ hybridization for ZIKV RNA. We determined that ZIKV can reach the MFI by six days after infection and infect the fetus by ten days. Infection of the chorionic membrane and the extraembryonic coelomic fluid preceded infection of the fetus and the mesenchymal tissue of the placental villi. We did not find evidence to support a transplacental route of ZIKV vertical transmission via infection of syncytiotrophoblasts or villous cytotrophoblasts. The pattern of infection observed in the maternal-fetal interface provides evidence of paraplacental vertical ZIKV transmission through the chorionic membrane, the outer layer of the fetal membranes.

A novel colorimetric biosensor for rapid detection of dengue virus upon acid-induced aggregation of colloidal gold.

Cam Duyen VT, Van Toi V, Van Hoi T, Truong PL.
17-08-2023
Anal Methods.
https://pubmed.ncbi.nlm.nih.gov/37545366/

Dengue virus serotype 2 genotype III evolution during the 2019 outbreak in Mato Grosso, Midwestern Brazil.

Dos Santos MAM, Pavon JAR, Dias LS, Viniski AE, Souza CLC, de Oliveira EC, de Azevedo VC, da Silva SP, Cruz ACR, Medeiros DBA, Nunes MRT, Slhessarenko RD.
Sept-2023
Infect Genet Evol.
https://pubmed.ncbi.nlm.nih.gov/37544570/

A point-of-care microfluidic biosensing system for rapid and ultrasensitive nucleic acid detection from clinical samples.

Zhang Y, Song Y, Weng Z, Yang J, Avery L, Dieckhaus KD, Lai RY, Gao X, Zhang Y.
22-08-2023
Lab Chip.
https://pubmed.ncbi.nlm.nih.gov/37539483/

Rapid and ultrasensitive point-of-care RNA detection plays a critical role in the diagnosis and management of various infectious diseases. The gold-standard detection method of reverse transcription-quantitative polymerase chain reaction (RT-qPCR) is ultrasensitive and accurate yet limited by the lengthy turnaround time (1-2 days). On the other hand, an antigen test offers rapid at-home detection (typically ~15 min) but suffers from low sensitivity and high false-negative rates. An ideal point-of-care diagnostic device would combine the merits of PCR-level sensitivity and rapid sample-to-result workflow comparable to antigen testing. However, the existing detection platforms typically possess superior sensitivity or rapid sample-to-result time, but not both. This paper reports a point-of-care microfluidic device that offers ultrasensitive yet rapid

detection of viral RNA from clinical samples. The device consists of a microfluidic chip for precisely manipulating small volumes of samples, a miniaturized heater for viral lysis and ribonuclease inactivation, a Cas13a-electrochemical sensor for target preamplification-free and ultrasensitive RNA detection, and a smartphone-compatible potentiostat for data acquisition. As demonstrations, the devices achieve the detection of heat-inactivated SARS-CoV-2 samples with a limit of detection down to 10 aM within 25 minutes, which is comparable to the sensitivity of RT-PCR and rapidness of an antigen test. The platform also successfully distinguishes all nine positive unprocessed clinical SARS-CoV-2 nasopharyngeal swab samples from four negative samples within 25 minutes of sample-to-result time. Together, this device provides a point-of-care solution that can be deployed in diverse settings beyond laboratory environments for rapid and accurate detection of RNA from clinical samples. The device can potentially be expandable to detect other viral targets, such as human immunodeficiency virus self-testing and Zika virus, where rapid and ultrasensitive point-of-care detection is required.

Population genetic characterization of (Aedes albopictus) mosquitoes (Diptera: Culicidae) from the Yangtze River Basin of China based on rDNA-ITS2.

Ma Z, Xing D, Liu Q, Gao J, Wang G, Li C, Guo X, Jiang Y, Zhao T, Zhou X, Zhang H, Zhao T.
Sept-2023
Infect Genet Evol.
https://pubmed.ncbi.nlm.nih.gov/37536530/

Background: Aedes albopictus is an important vector of many mosquito-borne viral diseases, including dengue fever and Zika. In recent years, it has spread and colonized tropical, subtropical and temperate regions worldwide. Monitoring of Ae. albopictus population dynamics is an important tool for early warning of mosquito-borne infections. Because the genetic diversity and genetic structure of natural populations are the genetic bases of population dynamics, studies of population genetics can reveal the origin, differentiation and dispersal characteristics of Ae. albopictus populations. Then, their evolutionary potential and environmental adaptability can be analyzed, providing a theoretical basis for the formulation of accurate Ae. albopictus surveillance and integrated control programs. Methods: In 2018, 552 Ae. albopictus larvae were collected during an invasive mosquito species surveillance project in China's Yangtze River Basin. Morphological analysis was performed to assign the adult mosquitoes to species, and then the genetic marker ITS2 was amplified and sequenced. Results: There were 179 haplotypes among 552 ITS2 sequences. In total, 155/179 (86.59%) haplotypes were specific to individual populations, and 24/179 (13.41%) haplotypes were shared by populations. Hap4 (126), Hap7 (43), and Hap16 (34) were the most numerous haplotypes and the most widely distributed. The overall Hd was 0.928, π was 0.031, the mean nucleotide difference number (K) was 7.255, and the number of segregating sites was 169. TCS network maps mainly showed a single star-like scattered distribution. According to geographical location, there were no obvious haplotype groups, and the haplotypes were intricately connected. The genetic diversity of Ae. albopictus populations in the Yangtze River Basin was high. The molecular variance observed in the populations of Ae. albopictus mainly occurred among individuals within populations, accounting for 98.79% of the total, while that among populations accounted for only 1.21% of the total. Only the populations of Ae. albopictus in the Chongqing and Sichuan regions showed a moderate degree of population genetic differentiation, while genetic differentiation between the other regions were small, gene exchange was very common, and genetic differentiation within populations was minimal. Conclusions: According to this study, the genetic diversity of Ae. albopictus populations in the Yangtze River Basin is high, the genetic differentiation among populations is small, and gene exchange is common. In addition, frequent interregional exchange exacerbates the abnormal spread of vectors. This study highlighted the potential spread route of the vector Ae. albopictus in the Yangtze River Basin. There are three potential dispersal routes for Ae. albopictus populations in the Yangtze River Basin. The findings could be helpful for effective surveillance and early warning of Ae. albopictus vectors.

A specific and low background nucleic acids sensing strategy based on rolling circle amplification coupled with a magnetic DNA machine.

Lai X, Zhao X, Peng Y, Zhang R, Pang H, Gao Z, Li D, Cao P, Pu Q, Qiao B, Pei H, Wu Q.
17-08-2023
Chem Commun (Camb).
https://pubmed.ncbi.nlm.nih.gov/37530562/

Protective Effects of Caffeine on Chikungunya and Zika Virus Infections: An in Vitro and in Silico Study.

de Jesús López Medina Y, Tamayo-Molina YS, Valdés-López JF, Urcuqui-Inchima S.
Août-2023
Chem Biodivers.
https://pubmed.ncbi.nlm.nih.gov/37489706/

Rapid Epidemic Expansion of Chikungunya Virus East/Central/South African Lineage, Paraguay.

Giovanetti M, Vazquez C, Lima M, Castro E, Rojas A, Gomez de la Fuente A, Aquino C, Cantero C, Fleitas F, Torales J, Barrios J, Ortega MJ, Gamarra ML, Villalba S, Alfonzo T, Xavier J, Adelino T, Fritsch H, Iani FCM, Pereira GC, de Oliveira C, Schuab G, Rodrigues ES, Kashima S, Leite J, Gresh L, Franco L, Tegally H, Van Voorhis WC, Lessels R, de Filippis AMB, Ojeda A, Sequera G, Montoya R, Holmes EC, de Oliveira T,

Rico JM, Lourenço J, Fonseca V, Alcantara LCJ.
Sept-2023
Emerg Infect Dis.
https://pubmed.ncbi.nlm.nih.gov/37488810/

The spread of Chikungunya virus is a major public health concern in the Americas. There were >120,000 cases and 51 deaths in 2023, of which 46 occurred in Paraguay. Using a suite of genomic, phylodynamic, and epidemiologic techniques, we characterized the ongoing large chikungunya epidemic in Paraguay.

Smartphone-integrated colorimetric and microfluidic paper-based analytical devices for the trace-level detection of permethrin.

Rasheed S, Ul Haq MA, Ahmad N, Sirajuddin, Hussain D.
15-12-2023
Food Chem.
https://pubmed.ncbi.nlm.nih.gov/37480777/

Investigating the aggregation perspective of Dengue virus proteome.

Kapuganti SK, Saumya KU, Verma D, Giri R.
Sept-2023
Virology.
https://pubmed.ncbi.nlm.nih.gov/37473502/

Euphopias G - J, macrocyclic diterpenes with anti-zika virus activity from Euphorbia helioscopia L.

Qiu X, Jiang YJ, Huang YX, Pang WH, Wu ZK, Zhou YL, Li R, Bi DW, Cheng B, Xiao WL, Zheng CB, Li XL.
Sept-2023
Fitoterapia.
https://pubmed.ncbi.nlm.nih.gov/37463646/

Four new diterpenoids (1-4) and sixteen known diterpenoids (5-20) were purified from the whole plant of Euphorbia helioscopia L. Compounds 1 and 2 were rhamofolane diterpenoids with a 5/7/6 tricyclic systems, compound 3 was a lathyranes diterpenoid, and compound 4 was a jathophanes diterpenoid. The isolated compounds were tested for their cytotoxicity and anti-Zika virus properties, and compounds 9 and 15 showed low cytotoxicity and strong anti-Zika virus properties with EC_{50} 2.63 and 5.94 μM, respectively. Further, the inhibitory effects of compounds on protein levels were determined using Western blotting and immunofluorescence assays.

Host Factor Nucleophosmin 1 (NPM1/B23) Exerts Antiviral Effects against Chikungunya Virus by Its Interaction with Viral Nonstructural Protein 3.

Pradeep P, Sivakumar KC, Sreekumar E.
17-08-2023
Microbiol Spectr.
https://pubmed.ncbi.nlm.nih.gov/37409962/

Chikungunya virus (CHIKV) hijacks host cell machinery to support its replication. Nucleophosmin 1 (NPM1/B23), a nucleolar phosphoprotein, is one of the host proteins known to restrict CHIKV infection; however, the mechanistic details of the antiviral role of NPM1 are not elucidated. It was seen in our experiments that the level of NPM1 expression affected the expression levels of interferon-stimulated genes (ISGs) that play antiviral roles in CHIKV infection, such as *IRF1*, *IRF7*, *OAS3*, and *IFIT1*, indicating that one of the antiviral mechanisms could be through modulation of interferon-mediated pathways. Our experiments also identified that for CHIKV restriction, NPM1 must move from the nucleus to the cytoplasm. A deletion of the nuclear export signal (NES), which confines NPM1 within the nucleus, abolishes its anti-CHIKV action. We observed that NPM1 binds CHIKV nonstructural protein 3 (nsP3) strongly via its macrodomain, thereby exerting a direct interaction with viral proteins to limit infection. Based on site-directed mutagenesis and coimmunoprecipitation studies, it was also observed that amino acid residues N24 and Y114 of the CHIKV nsP3 macrodomain, known to be involved in virus virulence, bind ADP-ribosylated NPM1 to inhibit infection. Overall, the results show a key role of NPM1 in CHIKV restriction and indicate it as a promising host target for developing antiviral strategies against CHIKV. IMPORTANCE Chikungunya, a recently reemerged mosquito-borne infection caused by a positive-sense, single-stranded RNA virus, has caused explosive epidemics in tropical regions. Unlike the classical symptoms of acute fever and debilitating arthralgia, incidences of neurological complications and mortality were reported. Currently there are no antivirals or commercial vaccines available against chikungunya. Like all viruses, CHIKV uses host cellular machinery for establishment of infection and successful replication. To counter this, the host cell activates several restriction factors and innate immune response mediators. Understanding these host-virus interactions helps to develop host-targeted antivirals against the disease. Here, we report the antiviral role of the multifunctional host protein NPM1 against CHIKV. The significant inhibitory effect of this protein against CHIKV involves its increased expression and movement from its natural location within the nucleus to the cytoplasm. There, it interacts with functional domains of key viral proteins. Our results support ongoing efforts toward development of host-directed antivirals against CHIKV and other alphaviruses.

Blockade-of-Binding Activities toward Envelope-Associated, Type-Specific Epitopes as a Correlative Marker for Dengue Virus-Neutralizing Antibody.

Keelapang P, Kraivong R, Pulmanausahakul R, Sriburi R, Prompetchara E, Kaewmaneephong J, Charoensri N, Pakchotanon P, Duangchinda T, Suparattanagool P, Luangaram P, Masrinoul P, Mongkolsapaya J, Screaton G, Ruxrungtham K, Auewarakul P, Yoksan S, Malasit P, Puttikhunt C, Ketloy C, Sittisombut N.
17-08-2023
Microbiol Spectr.
https://pubmed.ncbi.nlm.nih.gov/37409936/

Identification of an Arylnaphthalene Lignan Derivative as an Inhibitor against Dengue Virus Serotypes 1 to 4 (DENV-1 to -4) Using a Newly Developed DENV-3 Infectious Clone and Replicon.

Hu M, Li WF, Wu T, Yang Y, Chen G, Chen T, Liu Y, Mei Y, Wu D, Wei Y, Luo T, Zhang HJ, Li YP.
17-08-2023
Microbiol Spectr.
https://pubmed.ncbi.nlm.nih.gov/37378517/

Disease mapping for spatially semi-continuous data by estimating equations with application to dengue control.

Lin PS, Yu YJ, Zhu J.
10-09-2023
Stat Med.
https://pubmed.ncbi.nlm.nih.gov/37316997/

Disease mapping is a research field to estimate spatial pattern of disease risks so that areas with elevated risk levels can be identified. The motivation of this article is from a study of dengue fever infection, which causes seasonal epidemics in almost every summer in Taiwan. For analysis of zero-inflated data with spatial correlation and covariates, current methods would either cause a computational burden or miss associations between zero and non-zero responses. In this article, we develop estimating equations for a mixture regression model that accommodates spatial dependence and zero inflation for study of disease propagation. Asymptotic properties for the proposed estimates are established. A simulation study is conducted to evaluate performance of the mixture estimating equations; and a dengue dataset from southern Taiwan is used to illustrate the proposed method.

Evaluation of Neutralizing Activity against Omicron Subvariants in BA.5 Breakthrough Infection and Three-Dose Vaccination Using a Novel Chemiluminescence-Based, Virus-Mediated Cytopathic Assay.

Toyoda M, Tan TS, Motozono C, Barabona G, Yonekawa A, Shimono N, Minami R, Nagasaki Y, Miyashita Y, Oshiumi H, Nakamura K, Matsushita S, Kuwata T, Ueno T.
17-08-2023
Microbiol Spectr.
https://pubmed.ncbi.nlm.nih.gov/37310218/

Effect of Temperature on Mosquito Olfaction.

Lahondère C, Vinauger C, Liaw JE, Tobin KKS, Joiner JM, Riffell JA.
23-08-2023
Integr Comp Biol.
https://pubmed.ncbi.nlm.nih.gov/37309024/

Mosquitoes use a wide range of cues to find a host to feed on, eventually leading to the transmission of pathogens. Among them, olfactory cues (e.g., host-emitted odors, including CO2, and skin volatiles) play a central role in mediating host-seeking behaviors. While mosquito olfaction can be impacted by many factors, such as the physiological state of the insect (e.g., age, reproductive state), the impact of environmental temperature on the olfactory system remains unknown. In this study, we quantified the behavioral responses of Aedes aegypti mosquitoes, vectors of dengue, yellow fever, and Zika viruses, among other pathogens, to host and plant-related odors under different environmental temperatures.

Dengue: updates for dermatologists on the world's fastest-growing vector-borne disease.

Braun M, Andersen LK, Norton SA, Coates SJ.
Sept-2023
Int J Dermatol.
https://pubmed.ncbi.nlm.nih.gov/37306140/

Dengue is the world's fastest-growing vector borne disease and has significant epidemic potential in suitable climates. Recent disease models incorporating climate change scenarios predict geographic expansion across the globe, including parts of the United States and Europe. It will be increasingly important in the next decade for dermatologists to become familiar with dengue, as it commonly manifests with rashes, which can be used to aid diagnosis. In this review, we discuss dengue for general dermatologists, specifically focusing on its cutaneous manifestations, epidemiology, diagnosis, treatment, and prevention. As dengue continues to spread in both endemic and new locations, dermatologists may have a larger role in the timely diagnosis and management of this disease.

Analytical and Clinical Evaluation of a TaqMan Real-Time PCR Assay for the Detection of Chikungunya Virus.

Andrew A, Citartan M, Wong KA, Tang TH, Magdline Sia Henry S, Ch'ng ES.
17-08-2023
Microbiol Spectr.
https://pubmed.ncbi.nlm.nih.gov/37272795/

In vitro and in vivo efficacy of Molnupiravir against Zika virus infections.

Wang Z, Yang S, Dai Q, Guo X, Li Y, Li W, Yang X, Yang J, Yan X, Tao H, Luo C, Li S, Chen X, Cao R, Zhong W.
Août-2023
Virol Sin.
https://pubmed.ncbi.nlm.nih.gov/37268161/

South Asian Transplant Infectious Disease Guidelines for Solid Organ Transplant Candidates, Recipients, and Donors.

Bansal SB, Ramasubramanian V, Prasad N, Saraf N, Soman R, Makharia G, Varughese S, Sahay M, Deswal V, Jeloka T, Gang S, Sharma A, Rupali P, Shah DS, Jha V, Kotton CN.
01-09-2023
Transplantation.
https://pubmed.ncbi.nlm.nih.gov/36749281/

These guidelines discuss the epidemiology, screening, diagnosis, posttransplant prophylaxis, monitoring, and

management of endemic infections in solid organ transplant (SOT) candidates, recipients, and donors in South Asia. The guidelines also provide recommendations for SOT recipients traveling to this region. These guidelines are based on literature review and expert opinion by transplant physicians, surgeons, and infectious diseases specialists, mostly from South Asian countries (India, Pakistan, Bangladesh, Nepal, and Sri Lanka) as well as transplant experts from other countries. These guidelines cover relevant endemic bacterial infections (tuberculosis, leptospirosis, melioidosis, typhoid, scrub typhus), viral infections (hepatitis A, B, C, D, and E; rabies; and the arboviruses including dengue, chikungunya, Zika, Japanese encephalitis), endemic fungal infections (mucormycosis, histoplasmosis, talaromycosis, sporotrichosis), and endemic parasitic infections (malaria, leishmaniasis, toxoplasmosis, cryptosporidiosis, strongyloidiasis, and filariasis) as well as travelers' diarrhea and vaccination for SOT candidates and recipients including travelers visiting this region. These guidelines are intended to be an overview of each topic; more detailed reviews are being published as a special supplement in the Indian Journal of Transplantation .

Dracunculose

Notice of Retraction: Guinea-worm (Dracunculus medinensis) infection presenting as a diabetic foot abscess: A case report from Kerala.

[No authors listed]
Jan-Fév 2023
Natl Med J India.
https://pubmed.ncbi.nlm.nih.gov/37615131/

The article 'Guinea-worm (Dracunculus medinensis) infection presenting as a diabetic foot abscess: A case report from Kerala is being retracted based on a letter received from the Director of the National Centre of Disease Control, New Delhi where the centre has objected to the identification of the guinea-worm by the authors only on the basis of morphological observation, without any microscopic and histopathological examination. The author has agreed to the objection and to the withdrawal of the article. This article is therefore being retracted. PEUSH SAHNI Editor The National Medical Journal of India All India Institute of Medical Sciences, New Delhi, India nmji@nmji.in

A hot topic: thermogenesis in Amorphophallus.

Kirschner GK.
Août-2023
Plant J.
https://pubmed.ncbi.nlm.nih.gov/37608588/

Patterns and drivers of heat production in the plant genus Amorphophallus.

Claudel C, Loiseau O, Silvestro D, Lev-Yadun S, Antonelli A.
Août-2023
Plant J.
https://pubmed.ncbi.nlm.nih.gov/37340521/

Echinococcose

Traumatic occult pneumothorax and ipsilateral hydatid cyst: A case report.

Alhomsi MY, Almoshantaf MB, Homsieh SB.
13-08-2023
Int J Surg Case Rep.
https://pubmed.ncbi.nlm.nih.gov/37597430/

Introduction: Traumatic pneumothorax is a common chest condition that can be caused by a chest trauma. Hydatid cysts are also common, especially in Syria, and is caused by Echinococcus granulosis infection. Case presentation: We report a case of mutual presentation of pneumothorax and a large Hydatid cyst on the same chest side in an 18 years-old patient who got stabbed in the chest. The chest x-ray reveled well-defined, homogeneous radio-opacity lesion that is consistent with Hydatid cyst but no pneumothorax was observed. Later, the chest CT showed a small pneumothorax that coexist with the Hydatid cyst. The case was treated conservatively and the patient survived. Discussion: Some studies support treating asymptomatic trauma patients with occult PT with observation and placing a chest tube if still asymptomatic. Our case questions the management protocol for such a rare encounter as the stability status of the patient was poor, and there was a large hydatid cyst close to the chest wall. Conclusion: Physicians should be aware of the possible management solutions when dealing with similar cases, especially in emergency settings. Until clear guidelines are published for this matter, we recommend that high-level observation of the patient's vitals are the determining factor for suitable intervention.

IgG glycomic profiling identifies potential biomarkers for diagnosis of echinococcosis.

Feng X, BaiMaYangJin, Mo X, Zhang F, Hu W, Feng Z, Zhang T, Wei L, Lu H.
01-07-2023
J Chromatogr B Analyt Technol Biomed Life Sci.
https://pubmed.ncbi.nlm.nih.gov/37540936/

Establishment of a secondary infection laboratory model of Echinococcus shiquicus metacestode using BALB/c mice and Mongolian jirds (Meriones unguiculatus).

Wu Y, Li L, Xu F, Yan H, Ohiolei JA, Shumuye NA, Nian X, Li W, Zhang N, Fu B, Jia W.
Août-2023
Parasitology.
https://pubmed.ncbi.nlm.nih.gov/37475454/

Echinococcus shiquicus is peculiar to the Qinghai–Tibet plateau of China. Research on this parasite has mainly focused on epidemiological surveys and life cycle studies. So far, limited laboratory studies have been reported.

Here, experimental infection of *E. shiquicus* metacestode in BALB/c mice and Mongolian jirds (*Meriones unguiculatus*) was carried out to establish alternative laboratory animal models. Intraperitoneal inoculation of metacestode material containing protoscoleces (PSCs) obtained from infected plateau pikas were conducted on BALB/c mice. Furthermore, metacestode material without PSCs deriving from infected BALB/c mice was intraperitoneally inoculated to Mongolian jirds. Experimental animals were dissected for macroscopic and histopathological examination. The growth of cysts in BALB/c mice was infiltrative, and they invaded the murine entire body. Most of the metacestode cysts were multicystic, but a few were unilocular. The cysts contained sterile vesicles, which had no PSCs. The metacestode materials were able to successfully infect new mice. In the jirds model, *E. shiquicus* cysts were typically formed freely in the peritoneal cavity; the majority of these cysts were free while a small portion adhered loosely to nearby organs. The proportion of fertile cysts was high, and contained many PSCs. The PSCs produced in Mongolian jirds also successfully infected new ones, which confirms that jirds can serve as an alternative experimental intermediate host. In conclusion, a laboratory animal infection was successfully established for *E. shiquicus* using BALB/c mice and Mongolian jirds. These results provide new models for the in-depth study of *Echinococcus* metacestode survival strategy, host interactions and immune escape mechanism.

Novel molecular diagnostic (PCR) diagnosis and outcome of intestinal Echinococcus multilocularis in a dog from western Canada.

Evason MD, Jenkins EJ, Kolapo TU, Mitchell KD, Leutenegger CM, Peregrine AS.
23-05-2023
J Am Vet Med Assoc.
https://pubmed.ncbi.nlm.nih.gov/37225160/

Intestinal infection with Echinococcus multilocularis in a dog.

Jenkins EJ, Kolapo TU, Jarque MP, Ruschkowski C, Frey C.
12-05-2023
J Am Vet Med Assoc.
https://pubmed.ncbi.nlm.nih.gov/37179049/

Filariose lymphatique

Assessment of antigenemia among children in four hotspots of filarial endemic districts of Nepal during post-MDA surveillance.

Mehta PK, Maharjan M.
24-08-2023
Trop Med Health.
https://pubmed.ncbi.nlm.nih.gov/37620918/

Background: Sixty-three out of 77 districts reported lymphatic filariasis (LF) endemic in Nepal. Mass drug administration (MDA) with diethylcarbamazine (DEC) and albendazole (ALB) treatment program was continued for 6 to 11 rounds in these districts. Nepal government has stopped the MDA program based on the transmission assessment survey (TAS) report of 2014 and 2018 indicating Wuchereria bancrofti antigenemia prevalence < 2%. But the persistence of low levels of the circulating filarial antigen (CFA) in some foci of four endemic districts of Central Nepal, i.e., 0.4% in Dhading, 0.7% in Mahottari, 0.21% in Lalitpur and 1.2% in Bara district could responsible for enhancing the risk of infection resurgence. Hence the present study was designed to assess antigenic prevalence using Filariasis Test Strip (Alere, Scarborough ME) in children born after MDA in hotspot areas of four endemic districts of Central Nepal. Results: The present study covers 70% children of the eligible population. The result revealed significantly high CFA prevalence in hotspots of Mahottari district belonging to the Terai region and Dhading district belonging to the hilly region, i.e., 13% and 10%, respectively, compared to baseline prevalence and TAS report. While in Lalitpur district and Bara district CFA prevalence was still found to be less than 2%. A higher number of MDA rounds covered in hotspots were found significantly associated with the low antigenic prevalence of W. bancrofti. Whereas median treatment coverage and inter-quartile range (IQR) in study districts were not found significantly associated with CFA prevalence. Although the clinical manifestation of hydrocele (1%) was found in all four study districts, it was not due to the W. bancrofti infection. Conclusions: Two hotspot regions, one each from the Terai (Mahottari) and hilly (Dhading) districts were found highly prevalent with CFA and significantly associated with the number of MDA rounds but were not associated with treatment coverage and IQR. Higher CFA prevalence was observed in hotspots where baseline prevalence was high together indicating that rounds of MDA program need to be extended further in these hotspot regions of endemic districts.

Pharmacokinetics of Moxidectin combined with Albendazole or Albendazole plus Diethylcarbamazine for Bancroftian Filariasis.

Chhonker YS, Bjerum C, Bala V, Ouattara AF, Koudou BG, Gabo TP, Alshehri A, Meïté A, Fischer PU, Weil GJ, King CL, Budge PJ, Murry DJ.
24-08-2023
PLoS Negl Trop Dis.
https://pubmed.ncbi.nlm.nih.gov/37616301/

Moxidectin (MOX) is a milbemycin endectocide recently approved by the U.S. FDA for the treatment of onchocerciasis in persons at least 12 years of age. MOX has been shown to have a good safety profile in recent clinical trials. The efficacy of MOX for the treatment of lymphatic filariasis (LF) and its potential use in mass drug administration protocols for the elimination of LF is currently under evaluation. In the context of a clinical trial, we investigated the pharmacokinetics and drug interactions of a combination of MOX plus albendazole (ALB) with or without diethylcarbamazine (DEC) compared to ivermectin (IVM) plus ALB with or without DEC in the following four different treatment arms: (I) IVM (0.2mg/kg) plus DEC (6 mg/kg) and ALB (400mg); (II) IVM

plus ALB; (III) MOX (8 mg) plus DEC and ALB; and (IV) MOX plus ALB. Drug concentrations were determined using validated liquid chromatography-mass spectrometric methods. Pharmacokinetic parameters were determined using standard non-compartmental analysis methods. Statistical analysis was performed using JMP software. Fifty-eight of 164 study participants (53 men and five women) were included with ages ranging from 18 to 63 yrs (mean = 37). MOX apparent oral clearance (Cl/F) ranged from 0.7 to 10.8 L/hr with Cmax values ranging from 20.8 to 314.5 ng/mL. The mean (range) area under the curve (AUC)0-∞ for MOX, 3405 ng*hr/mL (742-11376), and IVM 1906 ng*hr/mL (692-5900), varied over a ~15.3 and ~8.5-fold range, respectively. The geometric mean ratio for Cmax, AUC0-t, and AUC0-∞ were within the no-drug interaction range of 80-125% for all drugs. This indicates that the addition of MOX to ALB alone or ALB plus DEC for LF therapy did not alter the drug exposure of co-administered drugs compared to IVM combinations.

Self-care treatment for lymphoedema of lymphatic filariasis using integrative medicine.

Narahari SR, Aggithaya MG, Ryan TJ, Muralidharan K, Franks PJ, Moffatt C, Mortimer PS.
24-08-2023
Br J Dermatol.
https://pubmed.ncbi.nlm.nih.gov/37615507/

Tropical leg lymphedema caused by podoconiosis is associated with increased colonisation by anaerobic bacteria.

Neidhöfer C, Nkwetta DL, Fuen BR, Yenban NF, Mbiatong N, Nchanji GT, Korir P, Wetzig N, Sieber M, Thiele R,

Parcina M, Klarmann-Schulz U, Hoerauf A, Wanji S, Ritter M.
23-08-2023
Sci Rep.
https://pubmed.ncbi.nlm.nih.gov/37612446/

The non-filarial and non-communicable disease podoconiosis affects around 4 million people and is characterized by severe leg lymphedema accompanied with painful intermittent acute inflammatory episodes, called acute dermatolymphangioadenitis (ADLA) attacks. Risk factors have been associated with the disease but the mechanisms of pathophysiology remain uncertain. Lymphedema can lead to skin lesions, which can serve as entry points for bacteria that may cause ADLA attacks leading to progression of the lymphedema. However, the microbiome of the skin of affected legs from podoconiosis individuals remains unclear. Thus, we analysed the skin microbiome of podoconiosis legs using next generation sequencing. We revealed a positive correlation between increasing lymphedema severity and non-commensal anaerobic bacteria, especially Anaerococcus provencensis, as well as a negative correlation with the presence of Corynebacterium, a constituent of normal skin flora. Disease symptoms were generally linked to higher microbial diversity and richness, which deviated from the normal composition of the skin. These findings show an association of distinct bacterial taxa with lymphedema stages, highlighting the important role of bacteria for the pathogenesis of podoconiosis and might enable a selection of better treatment regimens to manage ADLA attacks and disease progression.

Understanding gender and its intersection with social stratifiers on prevention and care seeking behavior of lymphatic filariasis in Nepal.

Arjyal A, Parajuli A, Kharel C, Del Barrio MO, Baral SC.
22-08-2023
Infect Dis Poverty.
https://pubmed.ncbi.nlm.nih.gov/37608332/

Scabies prevalence after ivermectin-based mass drug administration for lymphatic filariasis, Samoa 2018-2019.

Willis GA, Kearns T, Mayfield HJ, Sheridan S, Thomsen R, Naseri T, David MC, Engelman D, Steer AC, Graves PM, Lau CL.
22-08-2023
PLoS Negl Trop Dis.
https://pubmed.ncbi.nlm.nih.gov/37607196/

Background: Scabies is a common skin infestation caused by the Sarcoptes scabei mite. Ivermectin, one of three drugs used in mass drug administration (MDA) for lymphatic filariasis, is also effective for treating scabies. Ivermectin-based MDA was first conducted in Samoa in August 2018, with ivermectin being offered to those aged ≥5 years. Here, we report scabies prevalence in Samoa after MDA. Methods: We conducted household surveys 1.5-3.5 months (Survey 1) and 6-8 months (Survey 2) after the 2018 MDA in 35 primary sampling units. We conducted clinical examination for scabies-like rash and used International Alliance for the Control of Scabies classification criteria. We estimated scabies prevalence by age, gender and region. Multivariable logistic regression was used to assess factors associated with prevalence. Results: We surveyed 2868 people (499 households) and 2796 people (544 households) aged 0-75 years in Surveys 1 and 2, respectively. Scabies prevalence increased from 2.4% (95% CI 2.1-2.7%) to 4.4% (95% CI 4.0-4.9%) between surveys. Scabies was associated with younger age (0-4 years: aOR 3.5 [2.9-4.2]; 5-15 years: aOR 1.6 [1.4-1.8] compared to ≥16 years), female gender (aOR 1.2 [95% CI 1.1-1.4]; region (aOR range from 1.4 [1.1-1.7] to 2.5 [2.1-3.1] between regions), large households (aOR 2.6 [2.0-3.4] households ≥13), and not taking MDA in 2018 (aOR 1.3 [95% CI 1.1-1.6]). Conclusions: We found moderate prevalence of scabies in two population-representative surveys conducted within 8 months of the 2018 MDA for lymphatic filariasis. Prevalence appeared to increase between the surveys, and ongoing surveillance is recommended, particularly in young children.

Scientific literature on neglected tropical diseases: a bibliometric analysis.

Tebano G, Vanino E, Muratori P, Cristini F.
22-08-2023
Pathog Glob Health.

https://pubmed.ncbi.nlm.nih.gov/37606248/

Neglected tropical diseases (NTDs) are a group of diseases mainly affecting people in low- and middle-income Countries. The aim of this study was to perform a bibliometric analysis of the scientific literature on NTDs. Using the MeSH database, we quantified the number of publications on MEDLINE targeting each NTD, which were published from 1 January 1999 to 31 January 2019. In order to weight the number of publications targeting a given NTD according to the total number of publications/year, we calculated a Yearly Publication Index (YPI) for each NTD/year. Linear regression was used to determine if there was a significant increase or decrease of YPI over time. In order to weight the number of publications according to disease burden (expressed in Disability-adjusted life years - DALYs) we calculated a DALYs-weighted Publication Index (DWPI) for each NTD. The highest absolute number of publications focused on leishmaniasis, dengue and Chagas disease; the lowest on tungiasis, dracunculiasis, chromoblastomycosis and yaws. The number of publications significantly increased for chikungunya, chromoblastomycosis, dengue, leishmaniasis, snakebite envenoming, and yaws. It significantly decreased for ascariasis, cysticercosis, echinococcosis, leprosy, lymphatic filariasis, mycetoma, onchocerciasis. Leprosy had the highest DWPI (i.e. the highest number of publication considering the burden of disease), followed by Chagas disease; lymphatic filariasis had the lowest, followed by onchocerciasis. Overall, lymphatic filariasis, onchocerciasis and ascariasis presented the worst scenario, with both very few publications compared with their disease burden and a decreasing number of publications.

Programmed cell death pathways as targets for developing antifilarial drugs: Lessons from the recent findings.

Das NC, Chakraborty P, Nandy S, Dey A, Malik T, Mukherjee S.
22-08-2023
J Cell Mol Med.
https://pubmed.ncbi.nlm.nih.gov/37605891/

Real time ultrasound diagnosis of ovarian and pelvic filariasis by filarial dance sign.

Bayaskar M, Bhende V.
31-07-2023
J Radiol Case Rep.
https://pubmed.ncbi.nlm.nih.gov/37602196/

Lymphatic filariases and soil-transmitted helminthiases in Sri Lanka: the challenge of eliminating residual pockets of transmission.

Chandrasena NTGA, Gunaratna IE, Ediriweera D, de Silva NR.
09-10-2023
Philos Trans R Soc Lond B Biol Sci.
https://pubmed.ncbi.nlm.nih.gov/37598710/

Sri Lanka has successfully met the challenge of controlling both lymphatic filariasis (LF) and soil-transmitted helminthiases (STH) as public health problems. The primary public health strategy for combatting both conditions has been preventive chemotherapy. The national programme for the elimination of LF implemented five annual rounds of mass chemotherapy in the endemic districts from 2002 to 2006 using a combination of diethylcarbamazine and albendazole. The overall microfilaria rate declined from 0.21% in 2001 before the mass chemotherapy, to 0.06% in 2016, at declaration of elimination of LF as a public health problem by the World Health Organization. Currently Sri Lanka is in the phase of post-validation surveillance. Achieving control of STH has been more difficult. Mass deworming programmes have been implemented for nearly a century, and national-level surveys reported prevalence rates declining from 6.9% in 2003 to 1% in 2017. However, neither of these infections has been completely eliminated. A situation analysis indicates continued transmission of both among high-risk communities. This paper explores the reasons for persistence of transmission of both LF and STH in residual pockets and the measures that are required to achieve long-term control, or perhaps even interrupt transmission in Sri Lanka. This article is part of the theme issue 'Challenges and opportunities in the fight against neglected tropical diseases: a decade from the London Declaration on NTDs'.

Modernizing the design and analysis of prevalence surveys for neglected tropical diseases.

Diggle PJ, Fronterre C, Gass K, Hundley L, Niles-Robin R, Sampson A, Morice A, Scholte RC.
09-10-2023
Philos Trans R Soc Lond B Biol Sci.
https://pubmed.ncbi.nlm.nih.gov/37598704/

Gale

Worldwide prevalence of scabies: Some knowns but still many unknowns.

Micallef D, Boffa MJ.
Sept-2023
J Eur Acad Dermatol Venereol.
https://pubmed.ncbi.nlm.nih.gov/37622220/

Scabies prevalence after ivermectin-based mass drug administration for lymphatic filariasis, Samoa 2018-2019.

Willis GA, Kearns T, Mayfield HJ, Sheridan S, Thomsen R, Naseri T, David MC, Engelman D, Steer AC, Graves PM, Lau CL.
22-08-2023
PLoS Negl Trop Dis.
https://pubmed.ncbi.nlm.nih.gov/37607196/

Development and Validation of the ScAbIeS Tool for Diagnosing Scabies by

Community Healthcare Workers in Resource-Limited Settings.

Behera P, Pal D, Sirka CS, Patro BK, Sahu DP, Dash S, Taywade M.
21-07-2023
Cureus.
https://pubmed.ncbi.nlm.nih.gov/37605700/

Introduction Scabies can lead to community outbreaks if not diagnosed early. Developing and validating a relevant tool for diagnosing scabies at the community level is essential to bridging the early diagnosis and treatment gap. Objective The objective of this study is to develop and validate a newer tool to diagnose scabies at the community level by Community Healthcare Workers (CHWs) in resource-limited settings. Methods The developed "ScAbIeS" tool comprised five items divided into two major and three minor criteria. After its development, a longitudinal descriptive study validated the "ScAbIeS" tool. The eligible participants were included in the study through active screening in villages under the Rural Health Training Center (RHTC) Mendhasala. Those villages' Accredited Social Health Activists (ASHS) were included as CHWs for diagnosing scabies using the "ScAbIeS" tool. The participants with skin lesions and/or itching were diagnosed with scabies by CHWs using the "ScAbIeS" tool. The diagnosis of CHWs using the "ScAbIeS" tool was compared with those of physicians, including expert dermatologists, to determine the sensitivity and specificity. Results Kappa's agreement is found to be 0.896 for CHWs and trained physicians regarding the diagnosis of scabies by the "ScAbIeS" tool. Cronbach's alpha is 0.738 for major criteria and 0.565 for minor criteria. 0.778 is found to be Cronbach's alpha for the total scale. The "ScAbIeS" tool is 85% sensitive and 100% specific to diagnose scabies when used by CHWs. Conclusion The "ScAbIeS" tool can be used to diagnose scabies at the community level by CHWs with appropriate training. It will lead to the prevention of complications and community outbreaks of scabies.

In vitro and in vivo anti-eczema effect of Artemisia annua aqueous extract and its component profiling.

Zhao Y, Zhu L, Yang L, Chen M, Sun P, Ma Y, Zhang D, Zhao Y, Jia H.
19-08-2023
J Ethnopharmacol.
https://pubmed.ncbi.nlm.nih.gov/37604330/

Ethnopharmacological relevance: Artemisia annua L. belongs to the Asteraceae family and has a long history of clinical application in China. It has been widely used for centuries to treat fever, malaria, jaundice and some skin diseases (such as scabies and sores). Modern pharmacological studies have shown that it has anti-inflammatory, immunomodulatory, antimalarial and antibacterial effects. Aim of study: This study aimed to investigate the anti-eczema effect of A. annua aqueous extract (AAE), profile its potential bioactive components and try to explore its possible underlying mechanisms. Materials and methods: The MTT assay was employed to assess the cytotoxicity of AAE. The anti-eczema effect of AAE was evaluated using both an in vitro 3D epidermal inflammation model and an in vivo guinea pig itching model. The bioactive components of AAE were characterized by ultra-performance liquid chromatography quadrupole time-of-flight mass spectrometry coupled with the UNIFI platform. Results: In this study, we found that AAE is safe for primary human skin keratinocytes at concentrations ranging from 31.3 μg/mL to 250 μg/mL. Further investigations indicate that AAE can increase the itching threshold, inhibit the expression of the inflammatory cytokine TSLP, and promote the expression of FLG mRNA. Additionally, the utilization of UPLC-QTOF/MS and UNIFI platform enabled us to identify 61 potential bioactive components of AAE, with sesquiterpenes and phenolic acids being the most abundant components. Conclusions: In this study, the anti-inflammatory and anti-itch effects of the A. annua extract were revealed, along with sesquiterpenes and phenolic acids were identified as potential bioactive components according to literature. The AAE extract holds potential for utilization in the treatment of eczema.

Scabies in Cox's Bazar.

Thornton J.
19-08-2023
Lancet.
https://pubmed.ncbi.nlm.nih.gov/37604330/

Modelling mass drug administration strategies for reducing scabies burden in Monrovia, Liberia.

Tellioglu N, Chisholm RH, Campbell PT, Collinson S, Timothy J, Kollie K, Zayzay S, Devine A, McVernon J, Marks M, Geard N.
18-08-2023
Epidemiol Infect.
https://pubmed.ncbi.nlm.nih.gov/37593956/

Is the Sarcoptes scabiei var. hominis mite visible to the naked eye?

Yürekli A, Durdu M.
Sept-2023
Int J Dermatol.
https://pubmed.ncbi.nlm.nih.gov/37391922/

Helminthiases transmises par le sol (ascaridiose, trichuriase, ankylostomiase)

Negative association between ascaris lumbricoides seropositivity and Covid-19 severity: insights from a study in Benin.

Adjobimey T, Meyer J, Hennenfent A, Bara AJ, Lagnika L, Kocou B, Adjagba M, Laleye A, Hoerauf A, Parcina M.
09-08-2023
Front Immunol.
https://pubmed.ncbi.nlm.nih.gov/37622109/

Introduction: The COVID-19 pandemic has had devastating effects worldwide, but the trajectory of the pandemic has been milder in Low-and-Middle-Income Countries (LMICs), including those in Africa. Co-infection with helminths, such as Ascaris lumbricoides, has been suggested as a possible factor contributing to the reduced severity observed in these regions. Methods: The present study investigated the association between Ascaris-specific antibody levels and COVID-19 severity in 276 SARS-CoV-2-infected individuals in Benin. Participants were categorized into asymptomatic (n=100), mild (n=150), and severe (n=26) groups based on clinical disease severity. Sera were collected and analyzed using ELISA to measure Ascaris and SARS-CoV-2-specific antibodies, while Luminex was used to assess cytokines and SARS-CoV-2-specific neutralizing antibody expression. Results and discussion: The results demonstrated that asymptomatic SARS-CoV-2 seropositive individuals expressed, on average, 1.7 and 2.2-times higher levels of Ascaris antibodies compared to individuals with mild and severe COVID-19, respectively. This finding suggests an inverse correlation between Ascaris antibody levels and COVID-19 severity. Notably, logistic regression analysis showed that Ascaris seropositivity was significantly associated with a reduced risk of severe COVID-19 (OR = 0.277, p = 0.021). Interestingly, COVID-19 patients with comorbidities such as type 2 diabetes and high blood pressure showed lower expression of Ascaris antibodies. Strikingly, no correlation was observed between Ascaris antibody levels and SARS-CoV-2-specific neutralizing antibodies. On the other hand, individuals seronegative for Ascaris displayed significantly higher levels of systemic pro-inflammatory markers compared to seropositive individuals. These findings suggest that higher expression of Ascaris antibodies is associated with asymptomatic SARS-CoV-2 infections and may contribute to the reduction of the risk to develop severe COVID-19. The beneficial effect of Ascaris seropositivity on COVID-19 outcomes in Benin may be attributed to a decrease in comorbidities and pro-inflammatory markers. These observations provide valuable insights into the milder COVID-19 trajectory observed in Africa and may have implications for future therapeutic strategies.

[Schistosomiasis, soil-transmitted helminthiases and sanitation in Latin America and the Caribbean: a systematic reviewRelación entre la prevalencia de esquistosomiasis y geohelmintiasis y las condiciones sanitarias en América Latina y el Caribe: una revisión sistemática].

Santos MCS, Heller L.
21-08-2023
Rev Panam Salud Publica.
https://pubmed.ncbi.nlm.nih.gov/37609526/

Low Prevalence of Soil-Transmitted Helminth Infections among Children in the States of Chhattisgarh and Himachal Pradesh, India, 2018.

Campbell SJ, Shanmugasundaram D, Ganguly S, Sehgal R, Karmakar S, Sanga P, Stephen HN, Kaur H, Kihara J, Minnery M, Nath S, Sen S, Bundy DA, Mishra N, Batra G, Shah H, Balasubramaniam S, Dutta S, Khera A, Murhekar M.
21-08-2023
Am J Trop Med Hyg.
https://pubmed.ncbi.nlm.nih.gov/37604473/

Large-scale impact assessments of soil-transmitted helminth (STH) programs are essential for determining the frequency of mass drug administration (MDA). In baseline surveys, the prevalence of STHs in the Indian States of Chhattisgarh and Himachal Pradesh was 80.2% in 2015 and 29.0% in 2016, respectively. In 2018, we estimated the prevalence and intensity of STHs after six rounds of biannual MDA in Chhattisgarh and annual MDA in Himachal Pradesh. We conducted multistage cluster sampling surveys in preschool-age children (PSAC), school-age children (SAC), and adolescent cohorts. Stool samples from 3,033 respondents (PSAC, n = 625; SAC, n = 1,363; adolescents, n = 1,045) in Chhattisgarh and 942 respondents (PSAC, n = 192; SAC, n = 388; adolescents, n = 362) in Himachal Pradesh were examined for presence of STH infection using the Kato-Katz method. The overall cluster-adjusted prevalence in Chhattisgarh was 11.6% among all age groups (95% CI, 5.6-22.4)-an 85.5% reduction in the prevalence since 2015. Prevalence was not significantly different across cohorts (PSAC, 11.0% [95% CI, 5.0-22.6]; SAC, 10.9% [95% CI, 5.2-21.6]; adolescents, 12.8% [95% CI, 6.2-24.5]). Ascaris lumbricoides was the most common helminth, with most infections of light intensity. In Himachal Pradesh, only three STH infections were detected in 2018, resulting in a cluster-adjusted prevalence of 0.3% (95% CI, 0.1-1.7)-a 99.0% reduction in prevalence since 2016. All infections were of light intensity. Both states showed substantial improvements in socioeconomic and water, sanitation, and hygiene (WASH) indicators since the baseline surveys. Extensive reductions in prevalence and intensity are linked to sustained, high deworming coverage, as well as socioeconomic WASH indicators.

Evaluation of Kato-Katz and multiplex quantitative polymerase chain reaction performance for clinical helminth infections in Thailand using a latent class analysis.

Rotejanaprasert C, Chuaicharoen P, Prada JM, Thantithaveewat T, Adisakwattana P, Pan-Ngum W.
09-10-2023
Philos Trans R Soc Lond B Biol Sci.
https://pubmed.ncbi.nlm.nih.gov/37598708/

Using an appropriate diagnostic tool is essential to soil-transmitted helminth control and elimination efforts. Kato-Katz (KK) is the most commonly used diagnostic, but recently other tools, such as real-time quantitative polymerase chain reaction (multiplex qPCR), are starting to be employed more. Here, we evaluated the performance of these two diagnostic tools for five helminth species in Thailand. In the absence of a gold standard, diagnostic performance can be evaluated using latent class analysis. Our results suggest that in moderate

to high prevalence settings above 2% multiplex qPCR could be more sensitive than KK, this was particularly apparent for *Opisthorchis viverrini* in the northeastern provinces. However, for low prevalence, both diagnostics suffered from low sensitivity. Specificity of both diagnostics was estimated to be high (above 70%) across all settings. For some specific helminth infection such as *O. viverrini*, multiplex qPCR is still a preferable choice of diagnostic test. KK performed equally well in detecting *Ascaris lumbricoides* and *Taenia solium* when the prevalence is moderate to high (above 2%). Neither test performed well when the prevalence of infection is low (below 2%), and certainly in the case for hookworm and *Trichuris trichiura*. Combination of two or more diagnostic tests can improve the performance although the cost would be high. Development of new methods for helminth surveillance at the pre-elimination phase is therefore very important. This article is part of the theme issue 'Challenges and opportunities in the fight against neglected tropical diseases: a decade from the London Declaration on NTDs'.

Leishmaniose

Niosome as an Effective Nanoscale Solution for the Treatment of Microbial Infections.

Barani M, Paknia F, Roostaee M, Kavyani B, Kalantar-Neyestanaki D, Ajalli N, Amirbeigi A.
16-08-2023
Biomed Res Int.
https://pubmed.ncbi.nlm.nih.gov/37621700/

Evolving immunometabolic response to the early Leishmania infantum infection in the spleen of BALB/c mice described by gene expression profiling.

Palacios G, Diaz-Solano R, Valladares B, Dorta-Guerra R, Carmelo E.
22-08-2023
Acta Trop.
https://pubmed.ncbi.nlm.nih.gov/37619900/

Transcriptional analysis is a useful approximation towards the identification of global changes in host-pathogen interaction, in order to elucidate tissue-specific immune responses that drive the immunopathology of the disease. For this purpose, expression of 223 genes involved in innate and adaptive immune response, lipid metabolism, prostaglandin synthesis, C-type lectin receptors and MAPK signaling pathway, among other processes, were analyzed during the early infection in spleens of BALB/c mice infected by Leishmania infantum. Our results highlight the activation of immune responses in spleen tissue as early as 1 day p.i., but a mixed pro-inflammatory and regulatory response at day 10 p.i., failing to induce an effective response towards control of Leishmania infection in the spleen. This ineffective response is coupled to downregulation of metabolic markers relevant for pathways related to icosanoid biosynthesis, adipocytokine signaling or HIF-1 signaling, among others. Interestingly, the over-representation of processes related to immune response, revealed Il21 as a potential early biomarker of L. infantum infection in the spleen. These results provide insights into the relationships between immune and metabolic responses at transcriptional level during the first days of infection in the L. infantum-BALB/c experimental model, revealing the deregulation of many important pathways and processes crucial for parasitic control in infected tissues.

Characterisation of geranylgeranyl diphosphate synthase from the sandfly Lutzomyia longipalpis.

Ducker C, French S, Pathak M, Taylor H, Sainter A, Askem W, Dreveny I, Santana AEG, Pickett JA, Oldham NJ.
22-08-2023
Insect Biochem Mol Biol.
https://pubmed.ncbi.nlm.nih.gov/37619821/

On abnormal Phlebotomus perniciosus (Diptera: Psychodidae: Phlebotominae) from the center of Tunisia.

Remadi L, Chargui N, Depaquit J, Randrianambinintsoa FJ, Chaâbane-Banaoues R, Babba H, Haouas N.
24-08-2023
J Med Entomol.
https://pubmed.ncbi.nlm.nih.gov/37616572/

Phlebotomus perniciosus is the most important vector of Leishmania infantum in the Western part of the Mediterranean basin. Atypical specimens of Ph. perniciosus called (pna) with a parameral sheath simply curved, not bifurcated, have been reported in many locations. In this study, we describe abnormal Ph. perniciosus male specimens. Sand flies were collected in center Tunisia and identified morphologically. Cytochrome b PCR-sequencing was carried out for abnormal Ph. perniciosus male specimens in order to confirm the morphological identification and assess the intraspecific genetic polymorphism. Abnormal Ph. perniciosus specimens were characterized by a multifurcated parameral sheath. A parsimonious haplotype network based on cyt b locus analysis showed that typical and abnormal Ph. perniciosus described in our investigation were grouped together in the same branch. Thus, genetic outcomes confirmed that the new phenotype is only an original morphotype of Ph. perniciosus.

An oligosaccharyltransferase from Leishmania donovani increases the N-glycan occupancy on plant-produced IgG1.

Beihammer G, König-Beihammer J, Kogelmann B, Ruocco V, Grünwald-Gruber C, D'Aoust MA, Lavoie PO, Saxena P, Gach JS, Steinkellner H, Strasser R.
08-08-2023
Front Plant Sci.
https://pubmed.ncbi.nlm.nih.gov/37615026/

Investigating pyroptosis as a mechanism of L. major cell-to-cell spread in the human BLaER1 infection model.

Volkmar K, Jaedtka M, Baars I, Walber B, Philipp MS, Bagola K, Müller AJ, Heine H, van Zandbergen G.
23-08-2023
Mol Microbiol.
https://pubmed.ncbi.nlm.nih.gov/37615026/

PLGA Nanoparticles as New Drug Delivery Systems in Leishmaniasis Chemotherapy: A Review of Current Practices.

Valiallahi A, Vazifeh Z, Gatabi ZR, Davoudi M, Gatabi IR.
23-08-2023
Curr Med Chem.
https://pubmed.ncbi.nlm.nih.gov/37612875/

Although leishmaniasis is one of the most common parasitic diseases, its traditional treatments suffer from some serious problems. To solve such issues, we can take advantage of the effective nanoparticle-based approaches to deliver anti-leishmanial agents into leishmania-infected macrophages either using passive targeting or using macrophage-related receptors. Despite the high potential of nanotechnology, Liposomal Amphotericin B (AmBisome®) is the only FDA-approved nanoparticle-based anti-leishmanial therapy. In an effort to find more anti-leishmanial nano-drugs, this 2011-2021 review study aimed to investigate the in-vivo and in-vitro effectiveness of poly (lactic-co-glycolic acid) nanoparticles (PLGA-NPs) in the delivery of some traditional anti-leishmanial drugs. Based on the results, PLGA-NPs could improve solubility, controlled release, trapping efficacy, bioavailability, selectivity, and mucosal penetration of the drugs, while they decreased resistance, dose/duration of administration and organotoxicity of the agents. However, none of these nano-formulations have been able to enter clinical trials so far. We summarized the data about the common problems of anti-leishmanial agents and the positive effects of various PLGA nano-formulations on reducing these drawbacks under both in-vitro and in-vitro conditions in three separate tables. Overall, this study proposes two AmB-loaded PLGA with a 99% reduction in parasite load as promising nanoparticles for further studies.

Descriptive and Geometric Morphometry of the Wings of Phlebotomus sergenti Populations in Central Morocco.

Abou-Elaaz FZ, Sereno D, Himmi O, Ghamizi M, Guernaoui S.
31-05-2023
J Arthropod Borne Dis.
https://pubmed.ncbi.nlm.nih.gov/37609567/

Background: *Phlebotomus sergenti*, the proven vector of *Leishmania tropica*, the causative agent of anthroponotic cutaneous leishmaniasis, is widely distributed in Morocco. Previous works using molecular markers (Internal Transcribed Spacer 2 rDNA and Cytochrome B mtDNA) hypothesized the existence of multiple closely related populations of sand fly species (cryptic species) that would exhibit distinct vectorial capacities. This work studies morphotypic diversity using traditional and geometric morphometry analyses carried out on *Ph. sergenti*'s wings from central Morocco, where active *L. tropica* transmission occurs for 30 years. Methods: Descriptive characteristics (size and shape) of the right wings were measured in *Ph. sergenti*'s specimens collected from fourteen stations in central Morocco. Both traditional and geometric morphometry methods were used to analyse geographic variations in *Ph. sergenti* wing's size and shape. Results: These analyses support the existence of distinct *Ph. sergenti* populations, enlightening significant phenotypic variations of *Ph. sergenti*'s wings, regarding their size and shape, depending on geographic origin. In addition, traditional and geometric morphometric analyses of the wing's length, centroid size, β, ɵ, and γ distances allowed clear discrimination of *Ph. sergenti* sub-populations. Conclusion: These data pinpoint the adaptative ability of *Ph. sergenti* to local environmental conditions. Additional studies are now required to further shed light on the genetic structure of *Ph. sergenti* populations in Morocco.

Nucleoside-Derived Metallohydrogel Induces Cell Death in Leishmania Parasites.

Bhattacharya S, Bhattacharyya T, Khanra S, Banerjee R, Dash J.
22-08-2023
ACS Infect Dis.
https://pubmed.ncbi.nlm.nih.gov/37606735/

Leishmania LPG interacts with LRR5/LRR6 of macrophage TLR4 for parasite invasion and impairs the macrophage functions.

Mazumder S, Sinha A, Ghosh S, Sharma GC, Prusty BM, Manna D, Pal D, Pal C, Dasgupta S.
21-08-2023
Pathog Dis.
https://pubmed.ncbi.nlm.nih.gov/37604789/

Clinical Presentation of American Tegumentary Leishmaniasis in a Leishmania (Viannia) braziliensis Endemic Hotspot: A 35-Year History.

Almazán MC, Cajal SP, Díaz-Fernández M, Juárez M, Quipildor M, Portal G, Tejerina V, Vargas C, Copa GN, Gil JF, Cimino RO, Krolewiecki AJ.
21-08-2023
Am J Trop Med Hyg.
https://pubmed.ncbi.nlm.nih.gov/37604471/

American tegumentary leishmaniasis (ATL) is a neglected tropical disease affecting the skin and mucosa. American tegumentary leishmaniasis due to Leishmania (Viannia) braziliensis is endemic in Argentina, where the Department of Oran is a hyperendemic focus. All cases of ATL with laboratory confirmation evaluated at a referral center in Oran city between 1985 and 2019 were analyzed retrospectively. Information from cases included clinical form, lesion size and number, time of evolution, and anatomical location; sex, age, and geographic origin were also studied. The temporal distribution of cases was

analyzed. A total of 3,573 cases were included in the analysis. The ratio of males to females was 3:1 and the median age was 33 years old. Eighty-seven percent of cases were from Oran city and its surroundings, highlighting the hyperendemic nature of the area. Regarding clinical forms, 92.5% of cases were cutaneous and 7.5% were mucosal, with a median evolution time until clinical evaluation of 30 days and 7 months, respectively. Single cutaneous lesions were more frequent, localized mainly on the exposed areas in the upper and lower limbs. Secondary events were observed and described in 140 (4%) cases, with a median interval of 3.8 years for the appearance of recurrent mucosal disease in previously cutaneous forms. This is the largest case series of ATL due to L. (V.) braziliensis. The most classic presentation is of adult males with single cutaneous ulcers in exposed body areas, with < 10% of cases with mucosal complications. This comprehensive clinical characterization serves as a basis for future studies of the care and control of this neglected tropical disease.

High seroprevalence of Leishmania infantum is linked to immune activation in people with HIV: a two-stage cross-sectional study in Bahia, Brazil.

de Moraes L, Santos LA, Arruda LB, da Silva MDPP, Silva MO, Silva JAG, Ramos A, Dos Santos MB, Torres FG, Orge C, Teixeira AMDS, Vieira TS, Ramírez L, Soto M, Grassi MFR, de Siqueira IC, Costa DL, Costa CHN, Andrade BB, Akrami K, de Oliveira CI, Boaventura VS, Barral-Netto M, Barral A, Vandamme AM, Van Weyenbergh J, Khouri R.
19-07-2023
Front Microbiol.
https://pubmed.ncbi.nlm.nih.gov/37601355/

Functionally distinct regions of the locus Leishmania major response 15 control IgE or IFNγ level in addition to skin lesions.

Krayem I, Sohrabi Y, Havelková H, Gusareva ES, Strnad H, Čepičková M, Volkova V, Kurey I, Vojtíšková J, Svobodová M, Demant P, Lipoldová M.
03-08-2023
Front Immunol.
https://pubmed.ncbi.nlm.nih.gov/37600780/

Oliveria decumbens Vent. (Apiaceae): Biological screening and chemical compositions.

Mirahmad A, Hafez Ghoran S, Alipour P, Taktaz F, Hassan S, Naderian M, Moradalipour A, Faizi M, Kobarfard F, Ayatollahi SA.
16-08-2023
J Ethnopharmacol.
https://pubmed.ncbi.nlm.nih.gov/37595813/

Self-application of aminoglycoside-based creams to treat cutaneous leishmaniasis in travelers.

Mouri O, Melenotte C, Guéry R, Cotteret C, Schweitzer-Chaput A, Perignon A, Thellier M, Bourrat E, Kaguelidou F, Siriez JY, Malvy D, Gangneux JP, Duvignaud A, Ravel C, Cisternino S, Ransom J, Caumes E, Lortholary O, Grogl M, Buffet P.
10-08-2023
PLoS Negl Trop Dis.
https://pubmed.ncbi.nlm.nih.gov/37561802/

Background: In endemic foci, the use of an aquaphilic cream containing paromomycin with/without gentamicin to treat cutaneous leishmaniasis (CL) is safe, painless and cures 78-82% of patients with New and Old World CL. Self-application in travelers requires evaluation. Methods: Travelers with 1-10 lesions of confirmed CL were prospectively treated with the paromomycin-gentamicin formulation (WR279396, 2012-2017, Group 1) and carefully follow up, or treated with a locally produced paromomycin-only cream (2018-2022, Group 2). The cream was applied once under supervision, then self-applied daily for 20-30 days. A cured lesion was defined as 100% re-epithelialization at day 42 without relapse at three months. Results: Medical features were similar in Group 1 (17 patients), and Group 2 (23 patients). Patients were infected with either Leishmania major, L. infantum, L. killicki, L. guyanensis, L. braziliensis, or L. naiffi. Intention-to-treat and per-protocol cure rates were 82% (95% confidence interval (CI) [64.23;100.00]) and 87% (95% CI [71,29;100.00]) in Group 1, and 69% (95% CI [50.76; 88.37]) and 76% (95% CI [57.97; 94.41]) in Group 2. In the pooled Group 1&2, 75% (95% CI [61.58;88.42]) (30/40) and 81% (95% CI [68,46;93.6]) (30/37) of patients were cured in intention-to-treat and per-protocol, respectively. There were no significant differences observed in the success rates between Old World and New World CL (83.3% vs. 60%, p = 0.14). Prospective observations in Group 1 showed that adverse events were mainly pruritus (24%) and pain (18%) on lesions (all mild or moderate). No mucosal involvement was observed in either group. Discussion: In this representative population of travelers who acquired CL either in the Old or New World, the 81% per-protocol cure rate of a self-applied aminoglycoside cream was similar to that observed in clinical trials.

Immunogenic mapping of rDyn-1 and rKDDR-plus proteins and selection of oligopeptides by immunoblotting for the diagnosis of Leishmania infantum-infected dogs.

Siqueira WF, Cardoso MS, Fraga VG, Ottino J, Ribeiro VM, Gondim CN, de Paiva Barçante JM, Amado Gomes AC, Galdino AS, Eersels K, van Grinsven B, Bartholomeu DC, Bueno LL, Cleij T, Fujiwara RT.
04-08-2023
PLoS Negl Trop Dis.
https://pubmed.ncbi.nlm.nih.gov/37540724/

Organogold(III)-dithiocarbamate compounds and their coordination analogues as anti-tumor and anti-leishmanial metallodrugs.

de Andrade Querino AL, de Sousa AM, Thomas SR, de Lima GM, Dittz D, Casini A, do Monte-Neto RL, Silva H.
J
Oct-2023
Inorg Biochem.
https://pubmed.ncbi.nlm.nih.gov/37536162/

The limited chemical stability of gold(III)-based compounds in physiological environment has been a challenge in drug discovery, and organometallic chemistry might provide the solution to overcome this issue. In this work, four novel cationic organogold(III)-dithiocarbamate complexes of general structure $[(C\hat{}N)Au^{III}DTC]PF_6$ (C1a - C4a, DTC = dithiocarbamate, L1 - L4, C^N = 2-anilinopyridine) are presented, and compared to their coordination gold(III)-dithiocarbamate analogues $[Au^{III}DTCCl_2]$ (C1b - C4b), as potential anti-cancer and anti-leishmanial drugs. Most of the complexes effectively inhibited cancer cell growth, notably C3a presented anti-proliferative effect in the nanomolar range against breast cancer (MCF-7 and MDA-MB-231 cells with moderate selectivity. Pro-apoptotic studies on treated MCF-7 cells showed a high population of cells in early apoptosis. Reactivity studies of C3a towards model thiols (N-acetyl-L-cysteine) refer to a possible mode of action involving bonding between the organogold(III)-core and the thiolate. In the scope of neglected diseases, gold complexes are emerging as promising therapeutic alternatives against leishmaniasis. In this regard, all gold(III)-dithiocarbamate complexes presented anti-leishmanial activity against at least one Leishmania species. Complexes C1a, C4a, C1b, C4b were active against all tested parasites with IC_{50} values varying between 0.12 and 42 µM, and, overall, organometallic compounds presented more intriguing inhibition profiles. For C4a selectivity over 500-fold for L. braziliensis; even higher than the reference anti-leishmanial drug amphotericin B. Overall, our findings revealed that the organogold(III) moiety significantly amplified the anti-cancer and anti-leishmanial effects with respect to the coordination analogues; thus, showing the great potential of organometallic chemistry in metallodrug-based chemotherapy for cancer and leishmaniasis.

Immunopathological investigation of a gerbil model of cutaneous leishmaniasis.

Mor B, Görmez A, Demirci B.
Oct-2023
Acta Trop.
https://pubmed.ncbi.nlm.nih.gov/37479161/

Leishmaniasis, caused by Leishmania species (intracellular protozoans), is a chronic, systemic disease that causes skin (cutaneous) and internal organ infections (visceral). Its prevalence has increased in recent years. Leishmania species are considered important pathogens that affect public health. After infecting an individual, the pathogen disrupts the immune system, but, there are not enough studies on which immune mechanisms are affected. The aim of this study was to establish a Leishmania major infection model (the causative agent of cutaneous leishmaniasis) in gerbils (Meriones unguiculatus) and to investigate the immune response in this model by examining the expression of important inflammatory genes (IL-1β, IL-2, IL-6, IFN-ɣ and TNF-α). The presence of parasites was confirmed by microscopic examination of samples taken from the lesions and culture studies. The expression of inflammatory cytokine genes was significantly increased in infected gerbils. The changes indicated that both the Th1 and Th2 pathways are activated in cutaneous leishmaniasis infection. Hence, different immunopathological mechanisms should be evaluated in the pathogenesis of the disease.

The association between rLiHyp1 protein plus adjuvant and amphotericin B is an effective immunotherapy against visceral leishmaniasis in mice.

Lage DP, Martins VT, Vale DL, Freitas CS, Pimenta BL, Moreira GJL, Ramos FF, Pereira IAG, Bandeira RS, de Jesus MM, Ludolf F, Tavares GSV, Chávez-Fumagalli MA, Roatt BM, Christodoulides M, Coelho EAF.
Oct-2023
Acta Trop.
https://pubmed.ncbi.nlm.nih.gov/37453579/

Treatment of visceral leishmaniasis (VL) is compromised by drug toxicity, high cost and/or the emergence of resistant strains. Though canine vaccines are available, there are no licensed prophylactic human vaccines. One strategy to improve clinical outcome for infected patients is immunotherapy, which associates a chemotherapy that acts directly to reduce parasitism and the administration of an immunogen-adjuvant that activates the host protective Th1-type immune response. In this study, we evaluated an immunotherapy protocol in a murine model by combining recombinant (r)LiHyp1 (a hypothetical amastigote-specific Leishmania protein protective against Leishmania infantum infection), with monophosphoryl-lipid A (MPLA) as adjuvant and amphotericin B (AmpB) as reference antileishmanial drug. We used this protocol to treat L. infantum infected-BALB/c mice, and parasitological, immunological and toxicological evaluations were performed at 1 and 30 days after treatment. Results showed that mice treated with rLiHyp1/MPLA/AmpB presented the lowest parasite burden in all organs evaluated, when both a limiting dilution technique and qPCR were used. In addition, these animals produced higher levels of IFN-ɣ and IL-12 cytokines and IgG2a isotype antibody, which were associated with lower production of IL-4 and IL-10 and IgG1 isotype. Furthermore, low levels of renal and hepatic damage markers were found in animals treated with rLiHyp1/MPLA/AmpB possibly reflecting the lower parasite load, as compared to the other groups. We conclude that the rLiHyp1/MPLA/AmpB combination could be considered in future studies as an immunotherapy protocol to treat against VL.

Leishmania donovani Exploits Tunneling Nanotubes for Dissemination and Propagation of B Cell Activation.

Stögerer T, Silva-Barrios S, Carmona-Pérez L, Swaminathan S, Mai LT, Leroux LP, Jaramillo M, Descoteaux A, Stäger S.
17-08-2023

Microbiol Spectr.
https://pubmed.ncbi.nlm.nih.gov/37404188/

Bayesian multivariate longitudinal model for immune responses to Leishmania: A tick-borne co-infection study.

Pabon-Rodriguez FM, Brown GD, Scorza BM, Petersen CA.
20-09-2023
Stat Med.
https://pubmed.ncbi.nlm.nih.gov/37350148/

While many Bayesian state-space models for infectious disease processes focus on population infection dynamics (eg, compartmental models), in this work we examine the evolution of infection processes and the complexities of the immune responses within the host using these techniques. We present a joint Bayesian state-space model to better understand how the immune system contributes to the control of Leishmania infantum infections over the disease course. We use longitudinal molecular diagnostic and clinical data of a cohort of dogs to describe population progression rates and present evidence for important drivers of clinical disease. Among these results, we find evidence for the importance of co-infection in disease progression. We also show that as dogs progress through the infection, parasite load is influenced by their age, ectoparasiticide treatment status, and serology. Furthermore, we present evidence that pathogen load information from an earlier point in time influences its future value and that the size of this effect varies depending on the clinical stage of the dog. In addition to characterizing the processes driving disease progression, we predict individual and aggregate patterns of Canine Leishmaniasis progression. Both our findings and the application to individual-level predictions are of direct clinical relevance, presenting possible opportunities for application in veterinary practice and motivating lines of additional investigation to better understand and predict disease progression. Finally, as an important zoonotic human pathogen, these results may support future efforts to prevent and treat human Leishmaniosis.

Leishmania major drives host phagocyte death and cell-to-cell transfer depending on intracellular pathogen proliferation rate.

Baars I, Jaedtka M, Dewitz LA, Fu Y, Franz T, Mohr J, Gintschel P, Berlin H, Degen A, Freier S, Rygol S, Schraven B, Kahlfuß S, van Zandbergen G, Müller AJ.
24-07-2023
JCI Insight.
https://pubmed.ncbi.nlm.nih.gov/37310793/

The virulence of intracellular pathogens relies largely on the ability to survive and replicate within phagocytes but also on release and transfer into new host cells. Such cell-to-cell transfer could represent a target for counteracting microbial pathogenesis. However, our understanding of the underlying cellular and molecular processes remains woefully insufficient. Using intravital 2-photon microscopy of caspase-3 activation in the Leishmania major-infected (L. major-infected) live skin, we showed increased apoptosis in cells infected by the parasite. Also, transfer of the parasite to new host cells occurred directly without a detectable extracellular state and was associated with concomitant uptake of cellular material from the original host cell. These in vivo findings were fully recapitulated in infections of isolated human phagocytes. Furthermore, we observed that high pathogen proliferation increased cell death in infected cells, and long-term residency within an infected host cell was only possible for slowly proliferating parasites. Our results therefore suggest that L. major drives its own dissemination to new phagocytes by inducing host cell death in a proliferation-dependent manner.

Naloxone Effects Against Cutaneous Leishmaniasis Caused by Leishmania major Strain MRHO/IR/75/ER in the BALB/c Mice.

Azizi H, Mahdavinik E, Hataminejad M, Khamesipour A, Montazeri S.
2023
Infect Disord Drug Targets.
https://pubmed.ncbi.nlm.nih.gov/37278044/

Intralesional Antimonial Drug Treatment for Leishmania braziliensis Cutaneous Leishmaniasis: The Knowns and the Unknowns.

Aronson NE, Billick K.
22-08-2023
Clin Infect Dis.
https://pubmed.ncbi.nlm.nih.gov/37185765/

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Lèpre

Evaluating human milk as a drug delivery vehicle for clofazimine to premature infants.

Ponsonby-Thomas E, Salim M, Klein LD, Clulow AJ, Seibt S, Boyd BJ.
22-08-2023
J Control Release.
https://pubmed.ncbi.nlm.nih.gov/37619865/

Isolation of indole alkaloids and a new norneolignan of hydroethanol extract from the stem barks of Aspidosperma nitidum Benth: Preclinical evaluation of safety and anti-inflammatory and healing properties.

Torres-Rêgo M, Nogueira PCDN, Santos SPDD, Daniele-Silva A, Cavalcanti FF, Oliveira CIFB, Rocha HAO, Fernandes Pedrosa MF, Silveira ER, Araújo RM.
22-08-2023
J Ethnopharmacol.
https://pubmed.ncbi.nlm.nih.gov/37619858/

Ethnopharmacological relevance: Aspidosperma nitidum Benth (Apocynaceae) is a tree found in Brazil especially in the Amazonia region, known as "carapanaúba", being used by indigenous and cabloco population in folk medicine in the treatment of malaria, leprosy, rheumatism, cancer, diabetes and inflammatory disorders. However, there are no scientific reports, up to now, to evidence its popular use as anti-inflammatory and healing agent.

Aim of the study: This study aimed to isolate indole alkaloids, as well as investigate the safety, anti-inflammatory and healing properties of hydroethanol extract from the stem barks of Aspidosperma nitidum Benth (An). Material and methods: The compounds were isolated using diverse chromatographic methodologies and the structures were determined by extensive spectroscopic analyses. The safety was evaluated in vitro through 3-methyl-[4-5-dimethylthiazol-2-yl]-2,5-diphenyltetrazolium bromide (MTT) assay using murine fibroblast (3T3) and monkey kidney (Vero E6) cell lines and by the hemolytic assay, as well as, in vivo, through acute toxicity model, which the mice received a single dose of 2000 mg/kg of An, by intra-gastric (i.g.) route, and behavioral, hematological and biochemical parameters were evaluated. The anti-edematogenic effect was monitored through carrageenan-induced paw edema model, in which the rodents were treated with 50, 100 and 200 mg/kg of An by i. g., the percentage of edema (0-4 h), myeloperoxidase (MPO) and pro-inflammatory cytokines (TNF-α, IL-6 and IL-1β) levels were quantified. The anti-inflammatory activity was demonstrated through the zymosan-air-pouch model, in which the animals were treated with 50, 100 and 200 mg/kg of An by i. g, and the leukocytes number, MPO, total protein and cytokines levels were determined. In addition, the healing potential was evaluated through a skin wound model, in which the mice received 50, 100 and 200 mg/mL of An in wound area, and the wound skins were photographed and the area calculated. Results: In total, five compounds were isolated in the An, being a new 8,9-dinorneolignan glucoside and four known indole alkaloids. The MTT and hemolytic assays, in all concentrations of the extract, demonstrated not be cytotoxic. Acute toxicity model also evidenced no sign of toxicity or significant changes on the behavior, biochemical and hematological parameters after use of the extract. In the edematogenic model, the An reduced significantly the percentage of edema, as well as, the MPO and pro-inflammatory cytokines levels. The same form, An revealed to be efficient in decreasing the leukocytes migration (mainly polymorphonuclears), total proteins, MPO and cytokines concentrations in the zymosan-air-pouch assay. Moreover, the An revealed a healing effect, reducing the area of the skin wound. Conclusion: Ours results evidence in the first time, the anti-inflammatory and healing property of An, justifying its use in traditional medicine. Moreover, include cytotoxicity in vitro and acute toxicity in vivo tests, which indicate the safety of use of the extract.

Individual, socioeconomic and healthcare access factors influencing the delays in leprosy presentation, diagnosis and treatment: a qualitative study.

de Oliveira Serra MAA, da Silva RAA, Monari FF, Silva JOE, de Sá Junior JX, Silva RAE, Fontoura IG, Neto MS, de Araújo MFM.
24-08-2023
Trans R Soc Trop Med Hyg.
https://pubmed.ncbi.nlm.nih.gov/37615659/

Background: This study investigated the factors influencing the presentation, diagnosis and treatment of leprosy in primary healthcare. Methods: Qualitative research was conducted on patients undergoing treatment in a priority hyperendemic region for leprosy control in northeastern Brazil. Interviews were conducted between September and December 2020 at primary healthcare centers. Data were analysed based on the basic interpretive qualitative structure according to Andersen and Newman's model of healthcare utilisation. Results: Knowledge of leprosy symptoms influenced patients' search for a diagnosis. Unfavorable socioeconomic conditions experienced by patients made diagnosis and treatment difficult. Incorrect evaluations by health professionals caused difficulties and delays in obtaining a diagnosis of leprosy. Perceptions about the disease, such as non-acceptance of the disease and the adverse effects of the medications, affected treatment seeking and treatment continuity. Conclusions: Patients with leprosy faced delays and healthcare access barriers related to knowledge of the disease, socioeconomic conditions and the structure of healthcare services, which must be considered when creating care plans, surveillance and control actions against leprosy. Appropriate interventions are necessary to reduce delays and better control the disease.

From the Cochrane Library: Interventions for Ulceration and Other Skin Changes Caused by Nerve Damage in Leprosy.

Anderson L, Adelman M, Reinar LM, Dellavalle RP.
23-08-2023
JMIR Dermatol.
https://pubmed.ncbi.nlm.nih.gov/37610814/

Fixed duration multidrug therapy (12 months) in leprosy patients with high bacillary load - Need to look beyond.

Narang T, Almeida JG, Kumar B, Rao PN, Suneetha S, Andrey Cipriani Frade M, Salgado CG, Dogra S.
21-07-2023
Indian J Dermatol Venereol Leprol.
https://pubmed.ncbi.nlm.nih.gov/37609736/

Dermatological adverse effects of hair dye use: A narrative review.

Palaniappan V, Karthikeyan K, Anusuya S.
27-07-2023
Indian J Dermatol Venereol Leprol.
https://pubmed.ncbi.nlm.nih.gov/37609728/

Hair dyeing is a popular practice dating back to ancient Egyptian times. Initially, hair dye use was restricted to concealing grey and white hairs of the elderly population. However, in recent times, its use is common among the younger generation as a fashion statement. Hair dye contact dermatitis is a common dermatological condition encountered by dermatologists. It is a delayed type of hypersensitivity reaction that commonly affects the scalp and the vicinity of hair line and neck. Para-phenylenediamine (PPD), a synthetic aromatic amine is the most common allergen specifically implicated in hair dye contact dermatitis. Para-phenylenediamine was announced as the allergen of the year in 2006 by the American Contact Dermatitis Society. Contact allergy to para-phenylenediamine can occur in 0.1-2.3% of the general population. Epicutaneous patch testing is the gold standard test for the diagnosis of hair dye contact dermatitis. However, para-phenylenediamine carries a risk of cross-sensitivity and co-sensitization to other allergens. Apart from contact dermatitis, hair dye use is also associated with various other cutaneous adverse effects such as pigmentary changes, hair loss, skin malignancies and autoimmune disorders. Due to the various adverse effects associated with hair dye use, it is prudent to look for safer alternatives to allergenic hair dyes. In this article, we review the epidemiology, cutaneous and systemic adverse effects associated with hair dye use, patch testing, preventive strategies to minimize the risk of hair dye contact dermatitis, and treatment aspects.

Dermoscopy of dermatofibrosarcoma protuberans in skin of colour: A study of four cases.

Mustari A, Chauhan P, Chatterjee D, Vinay K.
05-08-2023
Indian J Dermatol Venereol Leprol.
https://pubmed.ncbi.nlm.nih.gov/37609722/

An update on the myriad antifungal resistance mechanisms in dermatophytes and the place of experimental and existential therapeutic agents for Trichophyton complex implicated in tinea corporis and cruris.

Sardana K, Sharath S, Khurana A, Ghosh S.
22-08-2023
Expert Rev Anti Infect Ther.

Introduction: There is an epidemic emergence of increased resistance in dermatophytes with to antifungal drugs with ergosterol1 (Erg1) and Erg11 mutations to terbinafine and azoles. Apart from mutations, mechanisms that predict clinical failure include efflux pumps, cellular kinases, heat shock proteins (Hsp), and biofilms. Apart from itraconazole and SUBA™ (Super-Bioavailable) itraconazole, measures that can be used in terbinafine failure include efflux-pump inhibitors, Hsp inhibitors and judicious use of antifungal drugs (topical + systemic) combinations. Areas covered: A PubMed search was done for the relevant studies and reviews published in the last 22 years using keywords dermatophytes OR *Trichophyton*, anti-fungal, resistance, mechanism and fungal AND resistance mechanisms. Our aim was to look for literature on prevalent species and we specifically researched studies on *Trichophyton* genus. We have analyzed varied antifungal drug mechanisms and detailed varied experimental and approved drugs to treat recalcitrant dermatophytosis. Expert opinion: Apart from administering drugs with low minimum inhibitory concentration, combinations of oral and topical antifungals (based on synergy data) and new formulations of existing drugs are useful in recalcitrant cases. There is a need for research into resistance mechanism of the existent *Trichophyton* strains in therapeutic failures in tinea corporis & cruris instead of data derived from laboratory strains which may not mirror clinical failures.

Scientific literature on neglected tropical diseases: a bibliometric analysis.

Tebano G, Vanino E, Muratori P, Cristini F.
22-08-2023
Pathog Glob Health.
https://pubmed.ncbi.nlm.nih.gov/37606248/

Primary perineuritis, a rare but treatable neuropathy: Review of perineurial anatomy, clinicopathological features, and differential diagnosis.

Collins MP, Hadden RDM, Shahnoor N.
21-08-2023
Muscle Nerve.
https://pubmed.ncbi.nlm.nih.gov/37602939/

The perineurium surrounds each fascicle in peripheral nerves, forming part of the blood-nerve barrier. We describe its normal anatomy and function. "Perineuritis" refers to both a nonspecific histopathological finding and more specific clinicopathological entity, primary perineuritis (PP). Patients with PP are often assumed to have nonsystemic vasculitic neuropathy until nerve biopsy is performed. We systematically reviewed the literature on PP and developed a differential diagnosis for histopathologically defined perineuritis. We searched PubMed, Embase, Scopus, and Web of Science for "perineuritis." We identified 20 cases (11 M/9F) of PP: progressive, unexplained neuropathy with biopsy showing perineuritis without vasculitis or other known predisposing condition. Patients ranged in age from 18 to 75 (mean 53.7) y and had symptoms 2-24 (median 4.5) mo before diagnosis. Neuropathy was usually sensory-motor (15/20), painful (18/19), multifocal (16/20), and distal-predominant (16/17) with legs more affected than arms. Truncal numbness occurred in 6/17; 10/18 had elevated cerebrospinal fluid (CSF) protein. Electromyography (EMG) and nerve conduction studies (NCS) demonstrated primarily axonal changes. Nerve biopsies showed T-cell-predominant inflammation, widening, and fibrosis of perineurium; infiltrates in epineurium in 10/20 and

endoneurium in 7/20; and non-uniform axonal degeneration. Six had epithelioid cells. 19/20 received corticosteroids, 8 with additional immunomodulators; 18/19 improved. Two patients did not respond to intravenous immunoglobulin (IVIg). At final follow-up, 13/16 patients had mild and 2/16 moderate disability; 1/16 died. Secondary causes of perineuritis include leprosy, vasculitis, neurosarcoidosis, neuroborreliosis, neurolymphomatosis, toxic oil syndrome, eosinophilia-myalgia syndrome, and rarer conditions. PP appears to be an immune-mediated, corticosteroid-responsive disorder. It mimics nonsystemic vasculitic neuropathy. Cases with epithelioid cells might represent peripheral nervous system (PNS)-restricted forms of sarcoidosis.

Bacterial dissemination in Mycobacterium tuberculosis by CD+ T-cells & proinflammatory cytokines.

Davuluri KS, Singh SV, Chauhan DS.
Jan-2023
Indian J Med Res.
https://pubmed.ncbi.nlm.nih.gov/37602585/

Economic evaluation of self-help group interventions for health in LMICs: a scoping review.

Ochalek J, Gibbs NK, Faria R, Darlong J, Govindasamy K, Harden M, Meka A, Shrestha D, Napit IB, Lilford RJ, Sculpher M.
27-07-2023
Health Policy Plan.
https://pubmed.ncbi.nlm.nih.gov/37599510/

Hepatoprotective potential of Anagallis arvensis (L.) extract against carbon tetrachloride (CCl4)-induced hepatic injury and oxidative stress in rabbits.

Haseeb Ahsan -, Muhammad Naeem Qaisar -, Denggang Fu -, Muhammad Imran -, Muhammad Azam Tahir -, Khuram Ashfaq -, Farwa Naqvi -, Maria Manan -.
Juil-2023
Pak J Pharm Sci.
https://pubmed.ncbi.nlm.nih.gov/37599499/

A modelling analysis of a new multi-stage pathway for classifying achievement of public health milestones for leprosy.

Davis EL, Crump RE, Medley GF, Solomon AW, Pemmaraju VRR, Hollingsworth TD.
09-10-2023
Philos Trans R Soc Lond B Biol Sci.
https://pubmed.ncbi.nlm.nih.gov/37598707/

Several countries have come close to eliminating leprosy, but leprosy cases continue to be detected at low levels. Due to the long, highly variable delay from infection to detection, the relationship between observed cases and transmission is uncertain. The World Health Organization's new technical guidance provides a path for countries to reach elimination. We use a simple probabilistic model to simulate the stochastic dynamics of detected cases as transmission declines, and evaluate progress through the new public health milestones. In simulations where transmission is halted, 5 years of zero incidence in autochthonous children, combined with 3 years of zero incidence in all ages is a flawed indicator that transmission has halted (54% correctly classified). A further 10 years of only occasional sporadic cases is associated with a high probability of having interrupted transmission (99%). If, however, transmission continues at extremely low levels, it is possible that cases could be misidentified as historic cases from the tail of the incubation period distribution, although misleadingly achieving all three milestones is unlikely (less than 1% probability across a 15-year period of ongoing low-level transmission). These results demonstrate the feasibility and challenges of a phased progression of milestones towards interruption of transmission, allowing assessment of programme status. This article is part of the theme issue 'Challenges and opportunities in the fight against neglected tropical diseases: a decade from the London Declaration on NTDs'.

A user-centred implementation strategy for tuberculosis contact investigation in Uganda: protocol for a stepped-wedge, cluster-randomised trial.

Katamba A, Gupta AJ, Turimumahoro P, Ochom E, Ggita JM, Nakasendwa S, Nanziri L, Musinguzi J, Hennein R, Sekadde M, Hanrahan C, Byaruhanga R, Yoeli E, Turyahabwe S, Cattamanchi A, Dowdy DW, Haberer JE, Armstrong-Hough M, Kiwanuka N, Davis JL.
17-08-2023
BMC Public Health.
https://pubmed.ncbi.nlm.nih.gov/37592314/

Background: Tuberculosis(TB) is among the leading causes of infectious death worldwide. Contact investigation is an evidence-based, World Health Organisation-endorsed intervention for timely TB diagnosis, treatment, and prevention but has not been widely and effectively implemented. Methods: We are conducting a stepped-wedge, cluster-randomised, hybrid Type III implementation-effectiveness trial comparing a user-centred to a standard strategy for implementing TB contact investigation in 12 healthcare facilities in Uganda. The user-centred strategy consists of several client-focused components including (1) a TB-education booklet, (2) a contact-identification algorithm, (3) an instructional sputum-collection video, and (4) a community-health-rider service to transport clients, CHWs, and sputum samples, along with several healthcare-worker-focused components, including (1) collaborative improvement meetings, (2) regular audit-and-feedback reports, and (3) a digital group-chat application designed to develop a community of practice. Sites will cross-over from the standard to the user-centred strategy in six, eight-week transition steps following a randomly determined site-pairing scheme and timeline. The primary implementation outcome is the proportion of symptomatic close contacts completing TB evaluation within 60 days of TB treatment initiation by the index person with TB. The primary clinical effectiveness outcomes are the proportion of contacts diagnosed with and initiating active TB disease treatment and the proportion initiating TB preventative therapy

within 60 days. We will assess outcomes from routine source documents using intention-to-treat analyses. We will also conduct nested mixed-methods studies of implementation fidelity and context and perform cost-effectiveness and impact modelling. The Makerere School of Public Health IRB(#554), the Uganda National Council for Science and Technology(#HS1720ES), and the Yale Institutional Review Board(#2000023199) approved the study and waived informed consent for the main trial implementation-effectiveness outcomes. We will submit results for publication in peer-reviewed journals and disseminate findings to local policymakers and representatives of affected communities. **Discussion:** This pragmatic, quasi-experimental implementation trial will inform efforts to find and prevent undiagnosed persons with TB in high-burden settings using contact investigation. It will also help assess the suitability of human-centred design and communities of practice for tailoring implementation strategies and sustaining evidence-based interventions in low-and-middle-income countries.

Erythema ab igne: a cutaneous marker of prolonged thermal exposure.

Chandra A, Sil A, Das S, Chakraborty U.
17-08-2023
BMJ Case Rep.
https://pubmed.ncbi.nlm.nih.gov/37591625/

Evaluation of Xpert MTB/XDR test for susceptibility testing of Mycobacterium tuberculosis to first and second-line drugs in Uganda.

Katamba A, Ssengooba W, Sserubiri J, Semugenze D, Kasule GW, Nyombi A, Byaruhanga R, Turyahabwe S, Joloba ML.
17-08-2023
PLoS One.
https://pubmed.ncbi.nlm.nih.gov/37590288/

Background: Drug-Resistant Tuberculosis (DR-TB) is one of the major challenges to TB control. **Design and methods:** This was a blinded, laboratory-based cross-sectional study using sputum samples or culture isolates. Samples were from patients with rifampicin-resistant-TB and/or with high risk for isoniazid (INH) resistance and/or 2nd line fluoroquinolones (FQ) and injectable agents (IAs). The diagnostic accuracy of the Xpert® MTB/XDR test was compared to MGIT960 and the Hain Genotype® MTBDRplus and MDRsl assays (LPA) as reference DST methods. Factors for laboratory uptake of the Xpert® MTB/XDR test were also evaluated. **Results:** Of the 100 stored sputum samples included in this study, 65/99 (65.6%) were resistant to INH, 5/100 (5.0%) were resistant to FQ and none were resistant to IAs using MGIT960. The sensitivity and specificity, n (%; 95% Confidence Interval, CI) of Xpert® MTB/XDR test for; INH was 58 (89.2; 79.1-95.5) and 30 (88.2; 72.5-96.6) and for FQ; 4 (80.0; 28.3-99.4) and 95 (100; 96.2-100), respectively. Using LPA as a reference standard, a total of 52/98 (53.1%) were resistant to INH, 3/100 (3.0%) to FQ, and none to IA. The sensitivity and specificity, n (%; 95%CI) of Xpert® MTB/XDR test compared to LPA for; INH was 50 (96.1; 86.7-99.5) and 34 (74.0; 58.8-85.7) for FQ 3 (100; 29.2-100) and 96 (99.0; 94.3-99.9) respectively. The factors for laboratory uptake and roll-out of the Xpert® MTB/XDR test included: no training needed for technicians with, and one day for those without, previous Xpert-ultra experience, recording and reporting needs were not different from those of Xpert-ultra, the error rate was 4/100 (4%), one (1%) indeterminate rate and test turn-around-time were 1hr/45 minutes. **Conclusion:** There is high sensitivity and specificity of Xpert® MTB/XDR test for isoniazid and fluoroquinolones. There are acceptable Xpert® MTB/XDR test attributes for the test uptake and roll-out.

Massive and Lengthy Clonal Nosocomial Expansion of Mycobacterium abscessus subsp. massiliense among Patients Who Are Ventilator Dependent without Cystic Fibrosis.

Komiya K, Yoshida M, Uchida S, Takikawa S, Yamasue M, Matsumoto T, Morishige Y, Aono A, Hiramatsu K, Yamaoka Y, Nishizono A, Ato M, Kadota JI, Mitarai S.
17-08-2023
Microbiol Spectr.
https://pubmed.ncbi.nlm.nih.gov/37314340/

Nontuberculous mycobacterial infections are generally believed to be independently acquired from the environment. Although person-to-person transmission of nontuberculous mycobacteria, especially Mycobacterium abscessus subsp. *massiliense*, is a serious concern among individuals with cystic fibrosis (CF), evidence of its spread among patients without CF has never been established. We unexpectedly found a number of M. abscessus subsp. *massiliense* cases among patients without CF in a hospital. This study aimed to define the mechanism of M. abscessus subsp. *massiliense* infection among patients who were ventilator dependent and without CF who had progressive neurodegenerative diseases in our long-term care wards from 2014 to 2018 during suspected nosocomial outbreaks. We conducted whole-genome sequencing of M. abscessus subsp. *massiliense* isolates from 52 patients and environmental samples. Potential opportunities for in-hospital transmission were analyzed using epidemiological data. M. abscessus subsp. *massiliense* was isolated from one air sample obtained near a patient without CF who was colonized with M. abscessus subsp. *massiliense* but not from other potential sources. Phylogenetic analysis of the strains from these patients and the environmental isolate revealed clonal expansion of near-identical M. abscessus subsp. *massiliense* isolates, with the isolates generally differing by fewer than 22 single nucleotide polymorphisms (SNPs). Approximately half of the isolates differed by fewer than nine SNPs, indicating interpatient transmission. Whole-genome sequencing revealed a potential nosocomial outbreak among patients who were ventilator dependent and without CF. **IMPORTANCE** The isolation of M. abscessus subsp. *massiliense* from the air, but not from environmental fluid samples, may suggest airborne transmission. This was the first report to demonstrate person-to-person transmission of M. abscessus subsp. *massiliense*, even among patients without CF. M. abscessus subsp. *massiliense* may spread

among patients who are ventilator dependent without CF through direct or indirect in-hospital transmission. The current infection control measures should address potential transmission among patients without CF, particularly in facilities that treat patients who are ventilator dependent and patients with preexisting chronic pulmonary diseases, such as CF.

A Review of Software and Mobile Apps to Support the Clinical Diagnosis of Hansen Disease.

Costa WDL, de Oliveira AM, Aguilar GJ, Dos Santos LMAC, Dos Santos LRA, Donato DCB, Foresto F, Frade MAC.
18-08-2023
JMIR Dermatol.
https://pubmed.ncbi.nlm.nih.gov/37594779/

Hansen's disease and the first patient disease Registry.

Bardin P.
Sept-2023
Respirology.
https://pubmed.ncbi.nlm.nih.gov/37464271/

Comparison between lymecycline with multidrug therapy and standard multidrug regimen (WHO-MDT) in the treatment of multibacillary leprosy patients: a retrospective cohort study.

Diaz JCD, Abad-Venida ML, Espinoza-Thaebtharm A, Cathryn Salonga ME, Abad-Casintahan MF.
Sept-2023
Int J Dermatol.
https://pubmed.ncbi.nlm.nih.gov/37408116/

Background: Hansen's disease or leprosy is a chronic, infectious disease that has locally and globally afflicted all populations. Despite standard treatment with multidrug therapy (WHO-MDT), the incidence of drug resistance has been an increasingly prevalent global problem in leprosy management. This study compared the effectiveness between lymecycline with WHO-MDT and standard WHO-MDT in leprosy treatment. Methods: The research is a retrospective cohort study at a tertiary hospital from January 2011 to July 2021. Pre- and post-treatment bacillary index, presence of new lesions, nerve function impairment, and leprosy reactions were obtained through chart review. Results: The results showed a significant difference in bacteriological index (BI) in both groups at the end of the treatment. However, a higher reduction in BI was noted for the lymecycline group. For the group that took WHO-MDT alone, BI decreased by 0.7 ($P < 0.001$) whereas patients who took lymecycline and WHO-MDT had a BI difference of 3 ($P < 0.001$) upon completion of treatment. A significant decrease in the recurrence of lesions ($P = 0.006$) and nerve function impairment ($P = 0.038$) was also noted in the lymecycline group whereas there was no significant difference in leprosy reactions between the two groups. Conclusion: Lymecycline 600 mg daily for 3 months can be used as an adjunct in cases of leprosy resistance and treatment failure among multibacillary patients. Lymecycline significantly reduced bacillary index, recurrence of skin lesions, and nerve function impairment through its possible immunomodulatory, antiapoptotic, and neuroprotective effects.

Naloxone Effects Against Cutaneous Leishmaniasis Caused by Leishmania major Strain MRHO/IR/75/ER in the BALB/c Mice.

Azizi H, Mahdavinik E, Hataminejad M, Khamesipour A, Montazeri S.
2023
Infect Disord Drug Targets.
https://pubmed.ncbi.nlm.nih.gov/37278044/

Introduction: Cutaneous leishmaniasis (CL) is a serious health problem in some parts of the world, such as Iran. Since the use of pentavalent antimonial compounds such as meglumine antimoniate (Glucantime, MA) for the treatment of CL has side effects, naloxone as a new treatment in the footpad of Leishmania major (L. major)-infected BALB/c mice was investigated by evaluating the lesion size and the parasite burden.

Method: The animals were infected with L. major (MRHO/IR/75/ER). 40 BALB/c mice were divided into 4 groups (10/group), and were treated as follows 39 days after L. major infection: Group 1 treated with intraperitoneal injections of MA (100 mg/kg, positive control group) daily for six weeks; Group 2 received a 100 µl injection of PBS (negative control group); Group 3 received subcutaneous (SC) injections of naloxone (10 mg/kg) daily for six weeks (Naloxone1), and Group 4 was SC injected with naloxone (10 mg/kg) weekly for six weeks (Naloxone2). The lesion size was measured using a digital caliper. Result: After the end of treatment, the lesion parasite burden was evaluated. As compared to the negative control group, the groups that received MA and naloxone (groups 1, 3, and 4) showed fewer parasites. Also, the naloxone-treated mice showed significantly smaller lesion sizes than the negative control group ($p<0.05$), but they did not differ significantly from the MA-treated mice. Conclusion: Taken together, the results suggest that naloxone might be a promising and alternative treatment for CL.

Recurrent erythema nodosum leprosum leading to secondary renal amyloidosis and nephrotic syndrome in an Indian patient with lepromatous leprosy.

Ahuja R, Garg S, Barwad A, Subbiah A, Gupta V.
Sept-2023
Int J Dermatol.
https://pubmed.ncbi.nlm.nih.gov/37066445/

Morsures de serpent

How and why snakebite became a global health priority: a policy analysis.

Bhaumik S, Zwi AB, Norton R, Jagnoor J.
Août-2023
BMJ Glob Health.
https://pubmed.ncbi.nlm.nih.gov/37604596/

Ethnomedicinal uses, phytochemistry, and pharmacological relevance of Justicia procumbens (Oriental Water Willow) - A promising traditional plant.

Ibrahim SRM, Mohamed SGA, Abdallah HM, Mohamed GA.
05-12-2023
J Ethnopharmacol.
https://pubmed.ncbi.nlm.nih.gov/37385576/

Ethnopharmacological relevance: Justicia procumbens L. (JP) (Oriental Water Willow, Shrimp plant, Acanthaceae) is a herbaceous plant that is commonly found in India, Taiwan, Australia, Southern China, Vietnam, and Korea. The plant has been primarily used to treat fever, asthma, edema, cough, jaundice, urinary tract infection, and sore throat, as well as for snake bites and as a fish-killer. In the present review, the reported phyto-chemical, ethno-pharmacological, biological, and toxicological studies on J. procumbens were summarized. Special focus had been given to its reported lignans, regarding their isolation, characterization, quantitative estimation, and biosynthesis. Materials and methods: A survey of the literature was done using assorted databases and publishers; Scopus, Sci-Finder, Web of Science, PubMed, GoogleScholar, ScienceDirect, Wiley, Taylors&Francis, Bentham, Thieme, and Springer. Results: Currently, 95 metabolites have been separated fromJ. procumbens. Lignans and their glycosides were reported as main phyto-constituents of J. procumbens. Various methods are mentioned for quantitative estimation of these lignans. These phyto-constituents possessed wide pharmacological effectiveness, such as antiplatelet aggregation, antimicrobial, antitumor, and antiviral. Conclusions: Many of the stated effects are harmonious with the reported traditional uses of this plant. This data could further support J. procumbens's utilization as a herbal remedy and drug lead. However, further study of J. procumbens toxicity, as well as preclinical and clinical investigation is required to ensure the safe usage of J. procumbens.

Mycétome

Bilateral pubic and ischial osteotomy in cats offers good exposure for resection of large vaginal masses with minimal postoperative complications.

Forster K, Compagnone K, Fabrizio F.
25-08-2023
J Am Vet Med Assoc.
https://pubmed.ncbi.nlm.nih.gov/37619616/

Scientific literature on neglected tropical diseases: a bibliometric analysis.

Tebano G, Vanino E, Muratori P, Cristini F.
22-08-2023
Pathog Glob Health.
https://pubmed.ncbi.nlm.nih.gov/37606248/

Intravesical Mycetoma misdiagnosed as enterovesical fistula.

Huber L, Engelhardt PF, Riedl C.
05-08-2023
Urol Case Rep.
https://pubmed.ncbi.nlm.nih.gov/37601833/

Fungus formation in the urinary tract mainly occurs in immunosuppressed patients, and is a rare and dangerous complication of candiduria that is commonly misdiagnosed. We report a case of intravesical mycetoma associated with hydronephrosis, initially diagnosed as enterovesical fistula. Cystoscopy revealed spongy material within the urinary bladder, and histopathological examination showed Mycetoma of Candida species. The urine culture showed *Candida tropicalis*. Endoscopic removal and antifungal therapy with fluconazole was initiated, and no complications occurred during follow-up.

A Falciformispora senegalensis grain model in Galleria mellonella larvae.

Ma J, Konings M, Verbon A, van de Sande WWJ.
02-08-2023
Med Mycol.
https://pubmed.ncbi.nlm.nih.gov/37451815/

Eumycetoma is a subcutaneous implantation mycosis often found in the foot. One of the hallmarks of eumycetoma is the formation of grains. These grains are either black or white, and the consistency and morphology differs per causative agent. The two most common causative agents of black-grain eumycetoma are Madurella mycetomatis and Falciformispora senegalensis. Since grains cannot be formed in vitro, in vivo models are needed to study grain formation. Here, we used the invertebrate Galleria mellonella to establish an in vivo grain model for F. senegalensis. Three different F. senegalensis strains were selected, and four different inocula were used to infect G. mellonella larvae, ranging from 0.04 mg/larvae to 10 mg/larvae. Larval survival was monitored for 10 days. Grain formation was studied macroscopically and histologically. The efficacy of antifungal therapy was determined for itraconazole, amphotericin B, and terbinafine. A concentration of 10 mg F. senegalensis per larva was lethal for the majority of the larvae within 10 days. At this inoculum, grains were formed within 24 h after infection. The grains produced in the larvae resembled those formed in human patients. Amphotericin B given at 1 mg/kg 4 h, 28 h, and 52 h after infection prolonged larval survival. No enhanced survival was noted for itraconazole or terbinafine. In conclusion, we developed a F. senegalensis grain model in G. mellonella larvae in which grains were formed that were similar to those formed in patients. This model can be used to monitor grain formation over time and study antifungal efficacy.

Linezolid: a safer and effective substitute to aminoglycoside in the treatment of actinomycetoma by Nocardia species.

Chhabra N, Sri P, Ganguly S.
Sept-2023
Int J Dermatol.
https://pubmed.ncbi.nlm.nih.gov/37366290/

Onchocercose

Nodding syndrome is unlikely to be an autoimmune reaction to leiomodin-1 after infection by Onchocerca volvulus.

Kodja KG, Onzivua S, Kitara DL, Fong A, Kim P, Pollanen MS.
08-06-2023
Biochem Biophys Rep.
https://pubmed.ncbi.nlm.nih.gov/37601452/

Can mass drug administration of moxidectin accelerate onchocerciasis elimination in Africa?

Kura K, Milton P, Hamley JID, Walker M, Bakajika DK, Kanza EM, Opoku NO, Howard H, Nigo MM, Asare S, Olipoh G, Attah SK, Mambandu GL, Kennedy KK, Kataliko K, Mumbere M, Halleux CM, Hopkins A, Kuesel AC, Kinrade S, Basáñez MG.
09-10-2023
Philos Trans R Soc Lond B Biol Sci.
https://pubmed.ncbi.nlm.nih.gov/37598705/

Epidemiological and modelling studies suggest that elimination of *Onchocerca volvulus* transmission (EoT) throughout Africa may not be achievable with annual mass drug administration (MDA) of ivermectin alone, particularly in areas of high endemicity and vector density. Single-dose Phase II and III clinical trials demonstrated moxidectin's superiority over ivermectin for prolonged clearance of *O. volvulus* microfilariae. We used the stochastic, individual-based EPIONCHO-IBM model to compare the probabilities of reaching EoT between ivermectin and moxidectin MDA for a range of endemicity levels (30 to 70% baseline microfilarial prevalence), treatment frequencies (annual and biannual) and therapeutic coverage/adherence values (65 and 80% of total population, with, respectively, 5 and 1% of systematic non-adherence). EPIONCHO-IBM's projections indicate that biannual (six-monthly) moxidectin MDA can reduce by half the number of years necessary to achieve EoT in mesoendemic areas and might be the only strategy that can achieve EoT in hyperendemic areas. Data needed to improve modelling projections include (i) the effect of repeated annual and biannual moxidectin treatment; (ii) inter- and intra-individual variation in response to successive treatments with moxidectin or ivermectin; (iii) the effect of moxidectin and ivermectin treatment on L3 development into adult worms; and (iv) patterns of adherence to moxidectin and ivermectin MDA. This article is part of the theme issue 'Challenges in the fight against neglected tropical diseases: a decade from the London Declaration on NTDs'.

The onchocerciasis hypothesis of nodding syndrome.

Colebunders R, Hadermann A, Siewe Fodjo JN.
17-08-2023
PLoS Negl Trop Dis.
https://pubmed.ncbi.nlm.nih.gov/37590176/

Nodding syndrome (NS) is a phenotypic presentation of onchocerciasis-associated epilepsy (OAE). OAE is an important public health problem in areas with high ongoing Onchocerca volvulus transmission. OAE, including NS, is preventable by strengthening onchocerciasis elimination programs. The presence of tau in OAE postmortem brains could be the consequence of neuroinflammation directly or indirectly induced by O. volvulus. Omics research is needed to investigate whether O. volvulus worms contain a neurotropic virus.

Pian

Scientific literature on neglected tropical diseases: a bibliometric analysis.

Tebano G, Vanino E, Muratori P, Cristini F.
22-08-2023
Pathog Glob Health.
https://pubmed.ncbi.nlm.nih.gov/37606248/

Rage

Rabies outbreak in Brazil: first case series in children from an indigenous village.

Tolentino Júnior DS, Marques MSV, Krummenauer A, Duarte MMS, Rocha SM, de Brito MG, de Santana LF, de Oliveira RC, de Assis EM, de Sousa Cavalcante KK, Alencar CH.
24-08-2023
Infect Dis Poverty.
https://pubmed.ncbi.nlm.nih.gov/37620861/

Background: Human rabies outbreak transmitted by bats continues to be a relevant public health problem not only in the Amazon region. The disease has affected one of the areas with the greatest poverty in southeastern Brazil, a region inhabited by the Maxakali indigenous people. Case presentation: We describe four cases of rabies among indigenous children that occurred in the indigenous village of Pradinho, municipality of Bertópolis, Minas Gerais, Brazil. Cases were notified between April and May 2022, all of whom died on average eight days after the first symptoms. All cases were observed in rural residents under 12 years of age. The probable form of exposure was through bat bites. The predominant symptoms were prostration, fever, dyspnea, sialorrhea, tachycardia, and altered level of consciousness. Half of the cases underwent late and/or incomplete post-exposure rabies prophylaxis, however, the other half underwent pre-exposure rabies prophylaxis, with only one case completing the scheme and another undergoing the adapted Milwaukee Protocol (Recife Protocol). All cases ended in death. Conclusions: This was the first rabies

outbreak among indigenous people in Brazil. Among the manifested clinical forms in the series, there was a disease atypical presentation in at least one case. We suggest active surveillance and an intercultural educational campaign to prevent new cases.

Biodiversity indices and Random Forests reveal the potential for striped skunk (Mephitis mephitis) fecal microbial communities to function as a biomarker for oral rabies vaccination.

Hopken MW, Gilfillan D, Gilbert AT, Piaggio AJ, Hilton MS, Pierce J, Kimball B, Abdo Z.
22-08-2023
PLoS One.
https://pubmed.ncbi.nlm.nih.gov/37607164/

Optimizing rabies vaccination of dogs in India.

Cuddington K, McAuliffe WHB.
22-08-2023
Epidemiol Infect.
https://pubmed.ncbi.nlm.nih.gov/37606523/

Rabies virus variants from bats closely related to variants found in marmosets (Callithrix jacchus), a neglected source of human rabies infection in Brazil.

de Sousa LLF, de Souza TL, Tibo LHS, Moura FBP, Junior FAS, de Oliveira-Filho EF, Ludwig-Begall LF, Cabral-Miranda G, Andreata-Santos R, Janini LMR, Poon LLM, Durães-Carvalho R.
Août-2023
J Med Virol.
https://pubmed.ncbi.nlm.nih.gov/37605969/

Rabies is a fatal viral zoonosis caused by rabies virus (RABV). RABV infects the central nervous system and triggers acute encephalomyelitis in both humans and animals. Endemic in the Brazilian Northeast region, RABV emergence in distinct wildlife species has been identified as a source of human rabies infection and as such, constitutes a public health concern. Here, we performed post-mortem RABV analyses of 144 encephalic tissues from bats sampled from January to July 2022, belonging to 15 different species. We identified phylogenetically distinct RABV from Phyllostomidae and Molossidae bats circulating in Northeastern Brazil. Phylogenetic clustering revealed the close evolutionary relationship between RABV viruses circulating in bats and variants hosted in white-tufted marmosets, commonly captured to be kept as pets and linked to human rabies cases and deaths in Brazil. Our findings underline the urgent need to implement a phylogenetic-scale epidemiological surveillance platform to track multiple RABV variants which may pose a threat to both humans and animals.

Capturing free-roaming dogs for sterilisation: A multi-site study in Goa, India.

Fielding HR, Fernandes KA, Amulya VR, Belgayer D, Misquita A, Kenny R, Gibson AD, Gamble L, Bronsvoort BMC, Mellanby RJ, Mazeri S.
12-08-2023
Prev Vet Med.
https://pubmed.ncbi.nlm.nih.gov/37595388/

Sterilisation and rabies vaccination programs seek to manage free-roaming domestic dog (Canis familiaris) populations with the aim to reduce inter-species disease transmission and conflicts. As effective, permanent, remotely-administered options are not yet available for sterilisation, and oral vaccination is not yet commonly used; free-roaming dogs are typically captured for these interventions. There is a paucity of information describing how dog capture rates change over time within defined areas following repeated capture efforts. This data is needed to allow efficient dog capture programmes to be developed. Using spatial co-ordinates of dog capture, we characterise where dogs are more likely to be captured in six catch-sterilise-release campaigns, in Goa state, India. Combining capture numbers with population survey data collected in five sites, we document the increasing difficulty of catching entire (non-sterilised) dogs as sterilisation coverage increases and demonstrate how this leads to increased unit costs. Accounting for the extra resources required to capture dogs when sterilisation coverage is high will improve estimation of the resources required to manage free-roaming dog populations and assist in planning the most efficient intervention strategies.

Evaluation of potential rabies exposure among Japanese international travelers: A retrospective descriptive study.

Nomoto H, Yamamoto K, Kutsuna S, Asai Y, Kasamatsu Y, Shirano M, Sahara T, Nakamura F, Katsuragi Y, Yamato M, Shinohara K, Sakamoto N, Hase R, Ogawa T, Nagasaka A, Miyata N, Ohmagari N.
18-08-2023
PLoS One.
https://pubmed.ncbi.nlm.nih.gov/37595010/

Schistosomiase

Accuracy of Diagnostic Tests for Detecting Schistosoma mansoni and S. haematobium in Sub-Saharan Africa: A Systematic Review and Meta-Analysis.

Feleke DG, Alemu Y, Bisetegn H, Debash H.
16-08-2023
Biomed Res Int.

Introduction: Schistosomiasis is causing high morbidity and significant mortality in endemic areas. Kato-Katz stool examination and urine filtration techniques are the conventional methods for the detection of intestinal and urinary schistosomiasis. The most appropriate diagnostic tools for the detection of schistosomiasis especially in low-prevalence settings should be used. Therefore, this study is aimed at investigating the diagnostic accuracy of *S. mansoni* and *S. haematobium* diagnostic tools in sub-

Saharan Africa. **Methods:** Electronic databases such as PubMed, PubMed Central/Medline, HINARI, Scopus, EMBASE, Science Direct, Google Scholar, and Cochrane Library were reviewed. The pooled estimates and heterogeneity were determined using Midas in Stata 14.0. The diagnostic accuracy of index tests was compared using the hierarchical summary of the receiver operating characteristic (HSROC) curve in Stata 14.0. **Results:** Twenty-four studies consisting of 12,370 individuals were tested to evaluate the accuracy of antigen, antibody, and molecular test methods for the detection of *S. mansoni* and *S. haematobium*. The pooled estimate of sensitivity and specificity of CCA was 88% (95% CI: 83-92) and 72 (95% CI: 62-80), respectively, when it is compared with parasitological stool examination for *S. mansoni* detection. On the other hand, ELISA showed a pooled estimate of sensitivity and specificity of 95% (95% CI: 93-96) and 35% (95% CI: 21-52), respectively, for the examination of *S. mansoni* using stool examination as a reference test. With regard to *S. haematobium*, the pooled estimate of sensitivity and specificity of polymerase chain reaction was 97% (95% CI: 78-100) and 94% (95% CI: 74-99), respectively. Moreover, the sensitivity and specificity of urine CCA vary between 41-80% and 55-91%, respectively, compared to urine microscopy. **Conclusion:** The effort of schistosomiasis elimination requires accurate case identification especially in low-intensity infections. This study showed that CCA had the highest sensitivity and moderate specificity for the diagnosis of *S. mansoni*. Similarly, the sensitivity of ELISA was excellent, but its specificity was low. The diagnostic accuracy of PCR for the detection of *S. haematobium* was excellent compared to urine microscopic examination.

[Schistosomiasis, soil-transmitted helminthiases and sanitation in Latin America and the Caribbean: a systematic reviewRelación entre la prevalencia de esquistosomiasis y geohelmintiasis y las condiciones sanitarias en América Latina y el Caribe: una revisión sistemática].

Santos MCS, Heller L.
21-08-2023
Rev Panam Salud Publica.
https://pubmed.ncbi.nlm.nih.gov/37609526/

High-throughput autoantibody profiling of different stages of Schistosomiasis japonica.

Zhou X, Wang X, Xu J, Tang Q, Bergquist R, Shi L, Qin Z.
Déc-2023
Autoimmunity.
https://pubmed.ncbi.nlm.nih.gov/37599561/

Reproducibility matters: intra- and inter-sample variation of the point-of-care circulating cathodic antigen test in two Schistosoma mansoni endemic areas in Uganda.

Kabbas-Piñango E, Arinaitwe M, van Dam GJ, Moses A, Namukuta A, Nankasi AB, Mwima NK, Besigye F, Prada JM, Lamberton PHL.
09-10-2023
Philos Trans R Soc Lond B Biol Sci.
https://pubmed.ncbi.nlm.nih.gov/37598698/

Over 240 million people are infected with schistosomiasis. Detecting *Schistosoma mansoni* eggs in stool using Kato-Katz thick smears (Kato-Katzs) is highly specific but lacks sensitivity. The urine-based point-of-care circulating cathodic antigen test (POC-CCA) has higher sensitivity, but issues include specificity, discrepancy between batches and interpretation of trace results. A semi-quantitative G-score and latent class analyses making no assumptions about trace readings have helped address some of these issues. However, intra-sample and inter-sample variation remains unknown for POC-CCAs. We collected 3 days of stool and urine from 349 and 621 participants, from high- and moderate-endemicity areas, respectively. We performed duplicate Kato-Katzs and one POC-CCA per sample. In the high-endemicity community, we also performed three POC-CCA technical replicates on one urine sample per participant. Latent class analysis was performed to estimate the relative contribution of intra- (test technical reproducibility) and inter-sample (day-to-day) variation on sensitivity and specificity. Within-sample variation for Kato-Katzs was higher than between-sample, with the opposite true for POC-CCAs. A POC-CCA G3 threshold most accurately assesses individual infections. However, to reach the WHO target product profile of the required 95% specificity for prevalence and monitoring and evaluation, a threshold of G4 is needed, but at the cost of reducing sensitivity. This article is part of the theme issue 'Challenges and opportunities in the fight against neglected tropical diseases: a decade from the London Declaration on NTDs'.

Reaching the World Health Organization elimination targets for schistosomiasis: the importance of a One Health perspective.

Díaz AV, Walker M, Webster JP.
09-10-2023
Philos Trans R Soc Lond B Biol Sci.
https://pubmed.ncbi.nlm.nih.gov/37598697/

Bisphenol A effects on the host Biomphalaria alexandrina and its parasite Schistosoma mansoni.

Habib MR, Mohamed AH, Nassar AHA, Sheir SK.
19-08-2023
Environ Sci Pollut Res Int.
https://pubmed.ncbi.nlm.nih.gov/37597145/

Bisphenol A (BPA) is one of the most potent endocrine-disrupting chemicals (EDCs) that adversely affect aquatic organisms. The present investigation explored the effects of exposure to BPA at 0.1 and 1 mgL^{-1} concentrations on the fecundity of Biomphalaria alexandrina, snail's infection with Schistosoma mansoni, and histology of the ovotestis and topographical structure of S. mansoni cercariae emerged from exposed snails. The 24 h LC_{50} and LC_{90}

values of BPA against B. alexandrina were 8.31 and 10.88 mgL^{-1} BPA, respectively. The exposure of snails to 0.1 or 1 mgL^{-1} BPA did not affect the snail's survival. However, these concentrations caused an increase in the reproductive rate (R_o) of infected snails. A slight decrease in egg production was observed in snails exposed to 0.1 mgL^{-1} BPA after being infected (infected then exposed). However, a significant increase in egg production was noted in snails exposed to 1 mgL^{-1} BPA after infection with S. mansoni. Histopathological investigations indicated a clear alteration in the ovotestis tissue structure of exposed and infected-exposed groups compared to the control snails. Chronic exposure to BPA caused pathological alterations in the gametogenic cells. SEM preparations of S. mansoni cercariae emerged from infected-exposed snails showed obvious body malformations. From a public health perspective, BPA pollution may negatively impact schistosomiasis transmission, as indicated by the disturbance in cercarial production and morphology. However, it has adverse effects on the reproduction and architecture of reproductive organs of exposed snails, indicating that B. alexandrina snails are sensitive to sublethal BPA exposure.

Schistosoma japonicum Associated Colorectal Cancer and Its Management.

Jain S, Rana M, Choubey P, Kumar S.
18-08-2023
Acta Parasitol.
https://pubmed.ncbi.nlm.nih.gov/37594685/

Background: An association between Schistosoma japonicum and colorectal cancer in humans has been known since a long time; however, this association remains understudied and lacks comprehensive experimentation support. Objective: Various epidemiological and pathological studies have established the role of chronic inflammation as a major factor behind the induction of colorectal cancer. The aim of this review is to present the current knowledge on the association of Schistosoma japonicum with colorectal cancer. Result: Mechanisms which lead to induction and progression of colorectal cancer are highlighted along with diagnosis and treatment for the same. Further, various methodologies, including mass drug administration, use of new drugs and vaccines, role of apoptosis, and histone-modifying enzymes, have been described which can either prevent the schistosomal infection itself or can check it from reaching an advanced stage. Conclusions: Epidemiological, clinical, pathological and surgical studies suggest that Schistosoma japonicum is responsible for induction of colorectal cancer. However, thorough clinical studies are required to support and globally accept this notion. Further, methodologies highlighted in this work can be employed in order to take care of schistosomal infection or address the cancer induction and progression.

Systematic review with meta-analysis: Prevalence, risk factors, and challenges for urinary schistosomiasis in children (USC).

Masdor NA, Kandayah T, Amsah N, Othman R, Hassan MR, Rahim SSSA, Jeffree MS, Awang Lukman K, Hidrus A.
17-08-2023
PLoS One.
https://pubmed.ncbi.nlm.nih.gov/37590252/

Background: Schistosomiasis is a parasitic infection that causes significant public health problems in tropical countries. Schistosoma haematobium species are blamable for causing urinary schistosomiasis. The infected person, specifically children, may be carrying the disease. This systematic review aimed to identify the current knowledge of urinary Schistosmiasis in children or USC on its epidemiology, risk factors, and challenges to spread the understanding of controlling the disease and reducing the complications. Method: In November 2021, a systematic computer-aided literature review was conducted using PubMed, SCOPUS and Web of Science, following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) criteria. The results were updated in February 2022. We only used papers that have at least the abstract available in English. Relevant articles were screened, duplicates were deleted, eligibility criteria were applied, and studies that met the criteria were reviewed. The keywords Human Schistosoma infections, prevalence, risk factors and challenges were included. The protocol for the review was registered with PROSPERO (registration number CRD42022311609). Pooled prevalence rates were calculated using the programme R version 4.2.1. Heterogeneity was assessed using the I2 statistic and p-value. A narrative approach was used to describe risk factors and challenges. Studies were selected and finalised based on the review question to prioritise. The quality of the included studies was assessed using the Mixed-Method Appraisal Tool (MMAT). Results: A total of 248 publications met the requirements for inclusion. Fifteen articles were included in this review, with the result showing high heterogeneity. The pooled prevalence of urinary schistosomiasis in children is 4% (95% confidence interval (CI)). Age, poor socioeconomic status, education, exposure to river water, and poor sanitation are the risk factors identified in this review. Challenges are faced due to limitations of clean water, lack of water resources, and poor hygiene. Conclusion: Modifiable risk factors such as poor knowledge and practices must be addressed immediately. Healthcare providers and schools could accomplish engaging in practical promotional activities. Communicating the intended messages to raise community awareness of urinary schistosomiasis is critical.

The prevailing infection of Schistosoma japonicum and other zoonotic parasites in bubaline reservoir hosts in the ricefield of lake ecosystem: the case of Lake Mainit, Philippines.

Estaño LA, Jumawan JC.
Août-2023
Parasitology.
https://pubmed.ncbi.nlm.nih.gov/37496395/

Single-Cell Analysis of CX3CR1+ Cells Reveals a Pathogenic Role for BIRC5+

Myeloid Proliferating Cells Driven by Staphylococcus aureus Leukotoxins.

Loredan DG, Devlin JC, Lacey KA, Howard N, Chen Z, Zwack EE, Lin JD, Ruggles KV, Khanna KM, Torres VJ, Loke P.
01-09-2023
J Immunol.
https://pubmed.ncbi.nlm.nih.gov/37466391/

Our previous studies identified a population of stem cell-like proliferating myeloid cells within inflamed tissues that could serve as a reservoir for tissue macrophages to adopt different activation states depending on the microenvironment. By lineage-tracing cells derived from CX3CR1+ precursors in mice during infection and profiling by single-cell RNA sequencing, in this study, we identify a cluster of BIRC5+ myeloid cells that expanded in the liver during chronic infection with either the parasite Schistosoma mansoni or the bacterial pathogen Staphylococcus aureus. In the absence of tissue-damaging toxins, S. aureus infection does not elicit these BIRC5+ cells. Moreover, deletion of BIRC5 from CX3CR1-expressing cells results in improved survival during S. aureus infection. Hence the combination of single-cell RNA sequencing and genetic fate-mapping CX3CR1+ cells revealed a toxin-dependent pathogenic role for BIRC5 in myeloid cells during S. aureus infection.

In Vitro Anthelminthic Activity and Ultrastructural Analysis of Barbatic Acid against Schistosomulae and Juvenile Worms of Schistosoma mansoni.

Fagundes Silva HAM, Andrade de Araújo HD, Pessoa de Azevedo Albuquerque MC, de Vasconcelos Lima M, Barroso Martins MC, Alves LC, Brayner FA, de Lima Aires A, Mendonça de Albuquerque Melo AM, da Silva NH.
Août-2023
Chem Biodivers.
https://pubmed.ncbi.nlm.nih.gov/37414744/

Schistosomiasis affects about 260 million people worldwide and the search for new schistosomicidal compounds is urgent. In this study we evaluated the in vitro effect of barbatic acid against schistosomulae and young worms of Schistosoma mansoni. The barbatic acid was evaluated through the bioassay of motility and mortality, cellular viability and ultrastructural analysis of juvenile stages through Scanning Electron Microscopy. Barbatic acid showed a schistosomicidal effect against schistosomulae and young worms of S. mansoni after 3 h of exposure. At the end of 24 h, barbatic acid showed 100 %, 89.5 %, 52 % and 28.5 % of lethality for schistosomulae at the concentrations of 200, 100, 50 and 25 µM, respectively. For young worms, barbatic acid showed 100 % and 31.7 % of lethality at the concentrations of 200 and 100 µM, respectively. Motility changes were observed at all sublethal concentrations. There was a significant reduction in the viability of young worms after exposure to barbatic acid at 50, 100 and 200 µM. Extensive damage to the schistosomulae and young worm's tegument, was observed from 50 µM. This report provides data showing the schistosomicidal effect of barbatic acid on schistosomulae and young worms of S. mansoni, causing death, motility changes and ultrastructural damage to worms.

The Existing Drug Nifuroxazide as an Antischistosomal Agent: In Vitro, In Vivo, and In Silico Studies of Macromolecular Targets.

Roquini V, Mengarda AC, Cajas RA, Martins-da-Silva MF, Godoy-Silva J, Santos GA, Espírito-Santo MCC, Pavani TFA, Melo VA, Salvadori MC, Teixeira FS, Rando DGG, de Moraes J.
17-08-2023
Microbiol Spectr.
https://pubmed.ncbi.nlm.nih.gov/37409934/

Trachome

Exploring multi-level risk factors and post-war burdens of trachomatous trichiasis among displaced population in Raya Kobo districts, implication for urgent action.

Jamal M, Kebede F.
18-08-2023
Int J Ophthalmol.
https://pubmed.ncbi.nlm.nih.gov/37602352/

Aim: To estimate post-war burdens of trachomatous trichiasis (TT) and multi-level risk factors among displaced population in Raya Kobo districts, implication for urgent action. Methods: A community-based cross-sectional study was conducted among 603 participants from randomly selected 14 displaced slums in the Raya Kobo district. The data was collected from February 16th to March 30th, 2023. Study participants were selected using the multistage sampling technique. A structured questionnaire and ophthalmic loupe with ×2.5 magnificence were used to collect from participants. Multi-level binary logistic regression was used to determine associated factors with TT infection. Adjusted odds ratio (AOR) with 95% confidence interval (CI) were claimed for the strength of association at P<0.05. Results: We recruited 602 (99.9%) participants for the final analysis. From the total, 126 (20.9%) and 98 (16.3%, 95%CI: 13.5%-19.4%) participants were diagnosed with active trachoma & TT infection, respectively. Being age ≥45y (AOR=7.9, 95%CI: 2.4-25.3), having multiple eye infections (AOR=2.73, 95%CI: 1.47-5.29), poor wealth index (AOR=9.2; 95%CI: 2.7-23.7) and twice face washing per day (AOR=0.082, 95%CI: 0.03-0.21) has identified as individual as factors for TT infection. Whereas, distance between clean water source ≥10 km (AOR=6.5, 95%CI: 3.9-31.3), and latrine availability (AOR=0.35, 95%CI: 0.21-0.58) were the two community-level factors associated with TT infections. Conclusion: The high prevalence of TT infection post-war throughout the study districts indicates a need for urgent clinical intervention in addition to rapid scaling up surgery, antibiotics, facial cleanliness, and environmental improvement (SAFE) strategies, strategy for high-risk population. Age≥45y, distance from the clean water source, poor wealth indexes, and eye infection are

identified to be risk factors for TT infection. Furthermore, community-level preventative factors for TT infection are found as latrine availability and face washing practice.

Women and trachoma: why prioritising gender equity is essential to achieve vision for all.

Sanders A, Emerson P, Courtright P, Hooper PJ.
2023
Community Eye Health.
https://pubmed.ncbi.nlm.nih.gov/37600683/

Modelling morbidity for neglected tropical diseases: the long and winding road from cumulative exposure to long-term pathology.

Borlase A, Prada JM, Crellen T.
09-10-2023
Philos Trans R Soc Lond B Biol Sci.
https://pubmed.ncbi.nlm.nih.gov/37598702/

Trématodoses d'origine alimentaire (clonorchiase, opisthorchiase, fasciolase et paragonimose

Fasciola hepatica GST mu-class suppresses the cytokine storm induced by E. coli -lipopolysaccharide whereas modulates the dynamic of peritoneal macrophages in a mouse model and suppresses the classical activation of macrophages.

Valdes-Fernandez BN, Ruiz-Jimenez C, Armina-Rodriguez A, Mendez LB, Espino AM.
10-08-2023
bioRxiv.
https://pubmed.ncbi.nlm.nih.gov/37609327/

The proteome of extracellular vesicles of the lung fluke Paragonimus kellicotti produced in vitro and in the lung cyst.

Di Maggio LS, Fischer K, Yates D, Curtis KC, Rosa BA, Martin J, Erdmann-Gilmore P, Sprung RSW, Mitreva M, Townsend RR, Weil GJ, Fischer PU.
22-08-2023
Sci Rep.
https://pubmed.ncbi.nlm.nih.gov/37608002/

Paragonimiasis is a zoonotic, food-borne trematode infection that affects 21 million people globally. Trematodes interact with their hosts via extracellular vesicles (EV) that carry protein and RNA cargo. We analyzed EV in excretory-secretory products (ESP) released by Paragonimus kellicotti adult worms cultured in vitro (EV ESP) and EV isolated from lung cyst fluid (EV CFP) recovered from infected gerbils. The majority of EV were approximately 30-50 nm in diameter. We identified 548 P. kellicotti-derived proteins in EV ESP by mass spectrometry and 8 proteins in EV CFP of which 7 were also present in EV ESP. No parasite-derived proteins were reliably detected in EV isolated from plasma samples. A cysteine protease (MK050848, CP-6) was the most abundant protein found in EV CFP in all technical and biological replicates. Immunolocalization of CP-6 showed strong labeling in the tegument of P. kellicotti and in the adjacent cyst and lung tissue that contained worm eggs. It is likely that CP-6 present in EV is involved in parasite-host interactions. These results provide new insights into interactions between Paragonimus and their mammalian hosts, and they provide potential clues for development of novel diagnostic tools and treatments.

Evaluation of Kato-Katz and multiplex quantitative polymerase chain reaction performance for clinical helminth infections in Thailand using a latent class analysis.

Rotejanaprasert C, Chuaicharoen P, Prada JM, Thantithaveewat T, Adisakwattana P, Pan-Ngum W.
09-10-2023
Philos Trans R Soc Lond B Biol Sci.
https://pubmed.ncbi.nlm.nih.gov/37598708/

Using an appropriate diagnostic tool is essential to soil-transmitted helminth control and elimination efforts. Kato-Katz (KK) is the most commonly used diagnostic, but recently other tools, such as real-time quantitative polymerase chain reaction (multiplex qPCR), are starting to be employed more. Here, we evaluated the performance of these two diagnostic tools for five helminth species in Thailand. In the absence of a gold standard, diagnostic performance can be evaluated using latent class analysis. Our results suggest that in moderate to high prevalence settings above 2% multiplex qPCR could be more sensitive than KK, this was particularly apparent for *Opisthorchis viverrini* in the northeastern provinces. However, for low prevalence, both diagnostics suffered from low sensitivity. Specificity of both diagnostics was estimated to be high (above 70%) across all settings. For some specific helminth infection such as *O. viverrini*, multiplex qPCR is still a preferable choice of diagnostic test. KK performed equally well in detecting *Ascaris lumbricoides* and *Taenia solium* when the prevalence is moderate to high (above 2%). Neither test performed well when the prevalence of infection is low (below 2%), and certainly in the case for hookworm and *Trichuris trichiura*. Combination of two or more diagnostic tests can improve the performance although the cost would be high. Development of new methods for helminth surveillance at the pre-elimination phase is therefore very important. This article is part of the theme issue 'Challenges and opportunities in the fight against neglected tropical diseases: a decade from the London Declaration on NTDs'.

The prevailing infection of Schistosoma japonicum and other zoonotic parasites in bubaline reservoir hosts in the

ricefield of lake ecosystem: the case of Lake Mainit, Philippines.

Estaño LA, Jumawan JC.
Août-2023
Parasitology.
https://pubmed.ncbi.nlm.nih.gov/37496395/

Trypanosomes (trypanosomiase et maladie de Chagas)

Molecular characterisation of Entamoeba histolytica UDP-glucose 4-epimerase, an enzyme able to provide building blocks for cyst wall formation.

Nagode A, Vanbeselaere J, Dutkiewicz Z, Kaltenbrunner S, Wilson IBH, Duchêne M.
24-08-2023
PLoS Negl Trop Dis.
https://pubmed.ncbi.nlm.nih.gov/37616327/

In the human host, the protozoan parasite Entamoeba histolytica is adapted to a non-invasive lifestyle in the colon as well as to an invasive lifestyle in the mesenterial blood vessels and the liver. This means to cope with bacteria and human cells as well as various metabolic challenges. Galactose and N-acetylgalactosamine (GalNAc) are sugars of great importance for the amoebae, they attach to the host mucus and enterocytes via their well-studied Gal/GalNAc specific lectin, they carry galactose residues in their surface glycans, and they cleave GalNAc from host mucins. The enzyme UDP-glucose 4-epimerase (GalE) works as a bridge between the galactose and glucose worlds, it can help to generate glucose for glycolysis from phagocytosis products containing galactose as well as providing UDP-galactose necessary for the biosynthesis of galactose-containing surface components. E. histolytica contains a single galE gene. We recombinantly expressed the enzyme in Escherichia coli and used a spectrophotometric assay to determine its temperature and pH dependency (37°C, pH 8.5), its kinetics for UDP-glucose (Km = 31.82 µM, Vmax = 4.31 U/mg) and substrate spectrum. As observed via RP-HPLC, the enzyme acts on UDP-Glc/Gal as well as UDP-GlcNAc/GalNAc. Previously, Trypanosoma brucei GalE and the bloodstream form of the parasite were shown to be susceptible to the three compounds ebselen, a selenoorganic drug with antioxidant properties, diethylstilbestrol, a mimic of oestrogen with anti-inflammatory properties, and ethacrynic acid, a loop diuretic used to treat oedema. In this study, the three compounds had cytotoxic activity against E. histolytica, but only ebselen inhibited the recombinant GalE with an IC50 of 1.79 µM (UDP-Gal) and 1.2 µM (UDP-GalNAc), suggesting that the two other compounds are active against other targets in the parasite. The importance of the ability of GalE to interconvert UDP-GalNAc and UDP-GlcNAc may be that the trophozoites can generate precursors for their own cyst wall from the sugar subunits cleaved from host mucins. This finding advances our understanding of the biochemical interactions of E. histolytica in its colonic environment.

Acute Chagas Disease Outbreak among Military Personnel, Colombia, 2021.

Vergara HD, Gómez CH, Faccini-Martínez ÁA, Herrera AC, López MJ, Camacho C, Muñoz L, Cruz-Saavedra L, Hernández C, Ramírez JD.
Sept-2023
Emerg Infect Dis.
https://pubmed.ncbi.nlm.nih.gov/37610186/

Systematic Analysis of Diverse Polynucleotide Kinase Clp1 Family Proteins in Eukaryotes: Three Unique Clp1 Proteins of Trypanosoma brucei.

Saito M, Inose R, Sato A, Tomita M, Suzuki H, Kanai A.
22-08-2023
J Mol Evol.
https://pubmed.ncbi.nlm.nih.gov/37606665/

The Clp1 family proteins, consisting of the Clp1 and Nol9/Grc3 groups, have polynucleotide kinase (PNK) activity at the 5' end of RNA strands and are important enzymes in the processing of some precursor RNAs. However, it remains unclear how this enzyme family diversified in the eukaryotes. We performed a large-scale molecular evolutionary analysis of the full-length genomes of 358 eukaryotic species to classify the diverse Clp1 family proteins. The average number of Clp1 family proteins in eukaryotes was 2.3 ± 1.0, and most representative species had both Clp1 and Nol9/Grc3 proteins, suggesting that the Clp1 and Nol9/Grc3 groups were already formed in the eukaryotic ancestor by gene duplication. We also detected an average of 4.1 ± 0.4 Clp1 family proteins in members of the protist phylum Euglenozoa. For example, in Trypanosoma brucei, there are three genes of the Clp1 group and one gene of the Nol9/Grc3 group. In the Clp1 group proteins encoded by these three genes, the C-terminal domains have been replaced by unique characteristics domains, so we designated these proteins Tb-Clp1-t1, Tb-Clp1-t2, and Tb-Clp1-t3. Experimental validation showed that only Tb-Clp1-t2 has PNK activity against RNA strands. As in this example, N-terminal and C-terminal domain replacement also contributed to the diversification of the Clp1 family proteins in other eukaryotic species. Our analysis also revealed that the Clp1 family proteins in humans and plants diversified through isoforms created by alternative splicing.

Shining the spotlight on the neglected: new high-quality genome assemblies as a gateway to understanding the evolution of Trypanosomatidae.

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21-08-2023
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cGAS-STING Pathway Activation during Trypanosoma cruzi Infection Leads to Tissue-Dependent Parasite Control.

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A Case of Chagas Cardiomyopathy in Western Virginia: Worlds Away?

Vattikonda K, Peterson CJ, Mulkey B, Allen B.
19-07-2023
Cureus.
https://pubmed.ncbi.nlm.nih.gov/37602121/

Chagas cardiomyopathy, caused by the parasite Trypanosoma cruzi, is a significant cause of cardiac pathology worldwide. Though most frequently observed in Latin America, Chagas disease is present in the United States and should be considered in patients with heart block or other cardiac abnormalities and previous travel to or residence in endemic areas. Here we describe a new diagnosis of Chagas cardiomyopathy in a patient residing in Virginia with a previous residence in Mexico.

Extracellular vesicles of Trypanosoma cruzi and immune complexes they form with sialylated and non-sialylated IgGs increase small peritoneal macrophage subpopulation and elicit different cytokines profiles.

Cornet-Gomez A, Moreira LR, Gomez-Samblás M, Osuna A.
02-08-2023
Front Immunol.
https://pubmed.ncbi.nlm.nih.gov/37600828/

American trypanosomiasis, or Chagas disease, is caused by the protozoan parasite *Trypanosoma cruzi* and is characterized by the presence of cardiac or gastrointestinal symptoms in a large number of patients during the chronic phase of the disease. Although the origin of the symptoms is not clear, several mechanisms have been described involving factors related to *T. cruzi* and the host immune response. In this sense, the extracellular vesicles (EVs) secreted by the parasite and the immune complexes (ICs) formed after their recognition by host IgGs (EVs-IgGs) may play an important role in the immune response during infection. The aim of the present work is to elucidate the modulation of the immune response exerted by EVs and the ICs they form by analyzing the variation in the subpopulations of small and large peritoneal macrophages after intraperitoneal inoculation in mice and to evaluate the role of the sialylation of the host IgGs in this immunomodulation. Both macrophage subpopulations were purified and subjected to cytokine expression analysis by RT-qPCR. The results showed an increase in the small peritoneal macrophage subpopulation after intraperitoneal injection of parasite EVs, but a greater increase in this subpopulation was observed when sialylated and non-sialylated ICs were injected, which was similar to inoculation with the trypomastigote stage of the parasite. The cytokine expression results showed the ability of both subpopulations to express inflammatory and non-inflammatory cytokines. These results suggest the role of free EVs in the acute phase of the disease and the possible role of immune complexes in the immune response in the chronic phase of the disease, when the levels of antibodies against the parasite allow the formation of immune complexes. The differential expression of interleukins showed after the inoculation of immune complexes formed with sialylated and non-sialylated IgGs and the interleukins expression induced by EVs, demonstrates that the IgG glycosilation is involved in the type of immune response that dominates in each of the phases of the Chagas disease.