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BOLLETTINO BIBLIOGRAFICO

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Rodriguez-Morales A.J., Castañeda-Hernández D.M.

Spirochetes: Leptospira

(2023) Encyclopedia of Food Safety, Second Edition, Volume 1-4, 1-4, pp. V2-303 - V2-309

DOI: 10.1016/B978-0-12-822521-9.21089-7

ABSTRACT: Leptospirosis is a worldwide zoonotic infection with a much greater incidence in tropical regions and has now been identified as one of the emerging infectious diseases, particularly associated with travel and recreational activities. The epidemiology of leptospirosis has been modified with changes in animal husbandry, climate, and human behavior. Resurgent interest in leptospirosis has resulted from large outbreaks that have received significant publicity. This zoonotic infection represents a significant risk through contaminated water and food as a foodborne disease. In this article, different epidemiological and clinical aspects as well as its implication for food safety have been reviewed.

LANGUAGE OF ORIGINAL DOCUMENT: English

Breneva N.V., Kiseleva E.Yu., Sharakshanov M.B., Borisov S.A., Budaeva S.E., Balakhonov S.V.

Modern Features of Pathogenic Leptospira Isolation and Identification in Siberia and the Far east [Современные особенности изоляции и идентификации патогенных лептоспир в Сибири и на дальнем Востоке]

(2024) Problemy Osobo Opasnykh Infektsii, (4), pp. 62 - 67

DOI: 10.21055/0370-1069-2023-4-62-67

ABSTRACT: Recently, pathogenic Leptospira culture isolation is an extremely rare phenomenon in Russia. The aim of our work was to synthesize the lessons learned at the Irkutsk Anti-Plague Institute from Leptospira culture isolation and identification since 2011. Materials and methods. Material from eight individuals with suspected leptospirosis and from 942 small mammals (SM) was examined using PCR and microscopic agglutination test (MAT), from humans and 260 SM, applying bacteriological method. Bacteriological temperature test, MAT, PCR, MLST and MALDI-TOF mass spectrometry with the original Leptospira protein profiles base were used to identify cultures. Six complete genomes were generated at the Central Research Institute of Epidemiology of the Rospotrebnadzor. Results and discussion. Leptospira have not been isolated from humans against the background of taking antibiotics, despite the positive PCR and MAT results. Four cultures of Leptospira borgpetersenii of the Javanica serogroup and three L. kirschneri (Grippotyphosa) have been isolated from SM. The results of identification using MLST scheme No. 1 and MALDI-TOF MS are identical. MLST in silico has shown the uniformity of two Grippotyphosa serogroup strains from Primorie and Khabarovsk with a sequence-type (ST) profile 110:100:94. ST146 is determined in four Javanica serogroup strains according to scheme No. 1, and unique single nucleotide polymorphisms are detected according to schemes No. 2–3. Thus, in Siberia and the Far East, between 2012 and 2016, seven pathogenic Leptospira cultures were isolated from carriers in natural foci; carrier infection rate being12.0–48.9 %. Javanica serogroup strains differ in the MLST profile characteristics and adapt to nutrient media for a longer time than Grippotyphosa serogroup strains.

LANGUAGE OF ORIGINAL DOCUMENT: Russian

Ulsenheimer B.C., Tonin A.A., von Laer A.E., dos Santos H.F., Sangioni L.A., Fighera R., dos Santos M.Y., Brayer D.I., de Avila Botton S.

Leptospira borgptersenii and Leptospira interrogans identified in wild mammals in Rio Grande do Sul, Brazil

(2024) Brazilian Journal of Microbiology

DOI: 10.1007/s42770-024-01348-4

ABSTRACT: Leptospira spp. are bacteria responsible for leptospirosis, a zoonotic disease with considerable impacts on the economy, animal health, and public health. This disease has a global distribution and is particularly prevalent in Brazil. Both rural and urban environments are habitats for Leptospira spp., which are primarily transmitted through contact with the urine of infected animals. Consequently, domestic and wild species can harbor these prokaryotes and serve as infection sources for other hosts. In the context of wild animals, there is a dearth of molecular studies elucidating the roles of various animal and bacterial species in the epidemiology of leptospirosis. Therefore, this study aimed to evaluate the presence of Leptospira spp. DNA in different species of free-living and captive wild animals and to assess the phylogenetic relationships of the identified microorganisms in Rio Grande do Sul, Brazil. The samples were evaluated for the presence of the gene lipL32 by polymerase chain reaction (PCR) and sequencing of the amplified fragment after which phylogenetic analyzes were carried out. DNA from Leptospira spp. was extracted from kidney tissue from wild animals (Mammalia class). Pathogenic Leptospira spp. DNA was detected in 9.6% (11/114) of the samples, originating from nine species of wild animals, including the white-eared opossum (Didelphis albiventris), skunk (Conepatus chinga), geoffroy's cat (Leopardus geoffroyi), margay (Leopardus wiedii), pampas fox (Lycalopex gymnocercus), capybara (Hydrochoerus hydrochaeris), common marmoset (Callithrix jacchus), neotropical river otter (Lontra longicaudis), and european hare (Lepus europaeus). Phylogenetic analysis revealed the presence of Leptospira borgpetersenii and Leptospira interrogans in these animals. This research is the first study contributing to the epidemiology of leptospirosis by identifying L. borgpetersenii and L. interrogans in free-living and captive wild animals in Rio Grande do Sul, Brazil, potentially acting as bacterial reservoirs. Additionally, our findings can inform sanitary measures for controlling and preventing the disease, thereby safeguarding public health.

LANGUAGE OF ORIGINAL DOCUMENT: English

Iani F.C.D.M., de Campos G.M., Adelino T.E.R., da Silva A.S., Kashima S., Alcantara L.C.J., Sampaio S.C., Giovanetti M., Elias M.C., Slavov S.N.

Metagenomic Analysis for Diagnosis of Hemorrhagic Fever in Minas Gerais, Brazil

(2024) Microorganisms, 12 (4), art. no. 769

DOI: 10.3390/microorganisms12040769

ABSTRACT: Viral hemorrhagic fever poses a significant public health challenge due to its severe clinical presentation and high mortality rate. The diagnostic process is hindered by similarity of symptoms across different diseases and the broad spectrum of pathogens that can cause hemorrhagic fever. In this study, we applied viral metagenomic analysis to 43 serum samples collected by the Public Health Laboratory (Fundação Ezequiel Dias, FUNED) in Minas Gerais State, Brazil, from patients diagnosed with hemorrhagic fever who had tested negative for the standard local hemorrhagic disease testing panel. This panel includes tests for Dengue virus (DENV) IgM, Zika virus IgM, Chikungunya virus IgM, yellow fever IgM, Hantavirus IgM, Rickettsia

rickettsii IgM/IgG, and Leptospira interrogans IgM, in addition to respective molecular tests for these infectious agents. The samples were grouped into 18 pools according to geographic origin and analyzed through next-generation sequencing on the NextSeq 2000 platform. Bioinformatic analysis revealed a prevalent occurrence of commensal viruses across all pools, but, notably, a significant number of reads corresponding to the DENV serotype 2 were identified in one specific pool. Further verification via real-time PCR confirmed the presence of DENV-2 RNA in an index case involving an oncology patient with hemorrhagic fever who had initially tested negative for anti-DENV IgM antibodies, thereby excluding this sample from initial molecular testing. The complete DENV-2 genome isolated from this patient was taxonomically classified within the cosmopolitan genotype that was recently introduced into Brazil. These findings highlight the critical role of considering the patient's clinical condition when deciding upon the most appropriate testing procedures. Additionally, this study showcases the potential of viral metagenomics in pinpointing the viral agents behind hemorrhagic diseases. Future research is needed to assess the practicality of incorporating metagenomics into standard viral diagnostic protocols.
LANGUAGE OF ORIGINAL DOCUMENT: English

Enferadi A., Ownagh A., Nofouzi K., Khordadmehr M.

Molecular and histopathological survey of Francisella spp., Borrelia spp. and Leptospira spp. in ornamental birds of four provinces of Iran

(2024) Gene Reports, 35, art. no. 101921

DOI: 10.1016/j.genrep.2024.101921

ABSTRACT: Leptospirosis, tularemia, and Lyme disease are among the most important infectious diseases affecting humans, animals, and birds. The present study aimed to identify these infections in exotic birds in Iran using conventional PCR and histopathology methods. The samples consisted of 51 fecal samples and 70 tissue samples collected from 10 different species of ornamental birds in four cities in Iran (Tehran, Tabriz, Ahvaz, and Yazd), each with distinct geographical locations. The presence of bacterial diseases caused by Francisella, Borrelia, and Leptospira in birds was investigated using the 16SrRNA, 5S-23SrRNA, and 16SrRNA genes, respectively. Histopathological examination was conducted on the brain, lung, trachea, kidney, and liver. The results showed a positive rate of 9.91 % for Francisella spp. and 16.52 % for Leptospira spp. DNA in ornamental birds. However, Borrelia species were not identified based on the 5S-23SrRNA gene. Furthermore, the molecular prevalence based on the 16SrRNA gene was 9.9 % (12 out of 121 samples) for Francisella spp. and 16.5 % (20 out of 121 samples) for Leptospira spp. Histopathological studies revealed tracheitis, pneumonia, nephritis, and hepatitis in the PCR-positive birds. To the best of our knowledge, this report represents the first isolation of Leptospira spp. and Francisella spp. from birds in Iran. Considering that both identified bacteria are zoonotic agents, these findings demand a public health risk assessment of exotic birds, which could be important reservoirs for these infections.
LANGUAGE OF ORIGINAL DOCUMENT: English

Boisson-Walsh A.

Leptospirosis cases triple in Réunion

(2024) The Lancet. Infectious diseases, 24 (5), pp. e286

DOI: 10.1016/S1473-3099(24)00249-4

ABSTRACT: A surge in leptospirosis cases this year prompts heightened surveillance measures on Réunion island. Alix Boisson-Walsh reports.
LANGUAGE OF ORIGINAL DOCUMENT: English

de Paula D.S., Santos Avelar K.E., Bilotta P.

Impacto das Mudanças Climáticas e da Pandemia na Ocorrência de Casos de Leptospirose no Estado do Rio de Janeiro

(2024) Fronteiras, 13 (1), pp. 21 - 39
DOI: 10.21664/2238-8869.2024v13i1p.21-39
ABSTRACT: Considering the population growth and intense urbanization in Brazil, basic sanitation becomes crucially important, directly impacting public health and closely aligning with the United Nations' Sustainable Development Goals (SDGs), particularly SDG 6. This correlational study examines the relationship between hydrological disasters and confirmed cases of leptospirosis in the state of Rio de Janeiro, before and during the Covid-19 pandemic, utilizing data from the Atlas Digital de Desastres do Brasil and DATASUS. The results indicate a strong and moderate correlation in the periods from 2007 to 2019 and 2007 to 2022, respectively, emphasizing the need for effective public policies in sanitation and leptospirosis control. The research also points to weaknesses in data collection and treatment, calling for additional studies to fully understand the causality between the variables studied. The social impact of this study is significant, as inadequate sanitation can lead to various diseases, including leptospirosis, which is prevalent under poor sanitary conditions.
LANGUAGE OF ORIGINAL DOCUMENT: Portuguese

Sasikumar H., Ganeshkumar P., R S., Rubeshkumar P., Venkatasamy V., Murhekar M.

Rapid assessment of coverage of doxycycline/azithromycin chemoprophylaxis against leptospirosis following floods, Kozhikode district, Kerala, 2018

(2024) Transactions of the Royal Society of Tropical Medicine and Hygiene, 118 (5), pp. 336 - 338
ABSTRACT: BACKGROUND: We estimated coverage of doxycycline chemoprophylaxis (200 mg once weekly) following floods in Kerala, India. METHODS: A cross-sectional survey was conducted to gather data on exposure to flood or stagnant water and receipt and consumption of chemoprophylaxis. RESULTS: Of 1573 individuals interviewed, 152 (10%) were exposed to flood water. Among these, 119 (78%) were eligible for chemoprophylaxis. Of those eligible, 58 (38.2% [95% confidence interval 30.8 to 46.1]) reported consuming the prescribed chemoprophylaxis. CONCLUSIONS: Despite the availability of chemoprophylaxis, consumption was less than ideal. We recommend targeted interventions to improve chemoprophylaxis coverage and public awareness campaigns to enhance its consumption among the affected population.
LANGUAGE OF ORIGINAL DOCUMENT: English

Bolat I., Saglam Y.S., Cengiz S., Yildirim S.

Determination of Leptospiral antigens in naturally infected canine uterus by immunohistochemical immunofluorescence and ELISA methods

(2023) Japanese Journal of Veterinary Research, 71 (3), pp. 95 - 108
DOI: 10.57494/jjvr.71.3_95
ABSTRACT: Leptospirosis is a zoonotic disease caused by various pathogenic Leptospira serovars. The disease also affects various animal species, especially humans. This disease, widespread in dogs, has become an important public health issue. In this study, uterine tissue and blood samples of 100 naturally infected dogs were examined to detect the presence of Leptospiral antigens. 100 uterine tissue samples were obtained from dogs that underwent ovariohysterectomy in Erzurum. After the uterine tissue was taken into buffered formalin solution, these samples were examined by histopathological, immunohistochemical, and immunofluorescence methods. The other part was putting it into the freezer at-20˚C for examinations made by ELISA (IgM and IgG). Blood samples were centrifuged and analyzed in the laboratory using the ELISA (IgG) method. In the histological examinations of uterine tissue samples to determine the cycle periods, findings of 57 proestrus, 14 estrus, 19 diestrus, and 10 anoestrus periods were determined. In the presented study, in uterine tissue samples, in the examinations performed with the immunohistochemical staining method 19%, in the examinations made with the immunofluorescence staining method 24%, and in the examinations performed with the ELISA diagnostic method IgM 4%, and IgG 23.52% were detected. When the blood samples were analyzed using by ELISA diagnostic method, 51% seropositivity was detected. In conclusion, Leptospirosis, found to be positive in both the blood and uterine tissues of dogs by different methods, was found to be quite common in dogs today, and it is thought that this zoonotic disease is a threat to public health.
LANGUAGE OF ORIGINAL DOCUMENT: English

Seth S., Maharshi S., Sharma K.K., Pokharna R., Nijhawan S., Sharma S.S.

Changing etiological spectrum of acute liver failure

(2024) Indian Journal of Gastroenterology
DOI: 10.1007/s12664-024-01578-2
ABSTRACT: Background and Objectives: Acute liver failure (ALF) is an uncommon but potentially dramatic syndrome characterized by massive hepatic necrosis and has a very high mortality rate of 50% to 75% without liver transplantation. This study is aimed at analyzing the etiological spectrum of ALF patients and compare these with ALF mimics such as malaria, dengue fever and other tropical infectious diseases. Methods: The study population included patients who presented with ALF and ALF mimics in a tertiary care center over two years. We retrospectively analyzed the patient case files and a comparison were made concerning the baseline demographic details, clinical profile, laboratory values and outcomes. Results: Sixty-three patients were assessed, with 32 in ALF and 31 in ALF mimics group. The most common cause for ALF was hepatitis A virus (25%), followed by hepatitis B virus (18.7%), drug-induced liver injury (12.7%), autoimmune hepatitis (12.5%), hepatitis E virus (9.3%) and Wilson's disease (6.25%). In the ALF mimics group, malaria (58.06%) was the most common cause, followed by dengue fever (16.1%), leptospirosis (12.9%) and scrub typhus (12.9%). Patients in the ALF mimics group had significantly higher incidence of fever (p = 0.001), hepatosplenomegaly (p = 0.01), anemia (p = 0.02) and shorter jaundice to encephalopathy duration (p = 0.032) as compared to the ALF group, while higher transaminase levels (p = 0.03), bilirubin (p = 0.01), prothrombin time (p = 0.01), serum ammonia (p = 0.02) and mortality (p = 0.02) were observed in ALF patients. Conclusions: The most common cause for ALF was hepatitis A virus, followed by hepatitis B virus, while in ALF mimics it was malaria followed by dengue fever, in our study. Patients of ALF mimics can have similar presentation, but a high index of

suspicion and awareness is required to identify the common infectious ALF mimics for early diagnosis. Graphical Abstract: (Figure presented.
LANGUAGE OF ORIGINAL DOCUMENT: English

Carmona Gasca C.A., Martínez González S., Castillo Sánchez L.O., Rodríguez Reyes E.A., Cárdenas Marrufo M.F., Vado Solís I., Castañeda Miranda G., López Huitrado L.P., de la Peña-Moctezuma A.
The Presence of a Virulent Clone of Leptospira interrogans Serovar Canicola in Confirmed Cases of Asymptomatic Dog Carriers in Mexico
(2024) Microorganisms, 12 (4), art. no. 674
DOI: 10.3390/microorganisms12040674
ABSTRACT: Leptospirosis is a neglected zoonotic disease that commonly affects cattle, pigs, horses, and dogs in many countries. Infection in dogs is usually subclinical, but acute cases of leptospirosis may occur along with systemic failure, which may become fatal. After recovery from an acute infection, dogs may become asymptomatic carriers and shed pathogenic leptospires through urine for long periods of time. Here, a study of ten different cases of leptospirosis is presented, showing the relevance of dogs as asymptomatic carriers of pathogenic Leptospira. The diagnosis was confirmed via isolation and further serological and genetic identification. Four Leptospira isolates (LOCaS28, 31, 34, and 46) were obtained from the kidneys and urine samples of 58 dogs destined for destruction (6.89%) at a Canine Control Center in Mexico City. No spirochetes were observed in the urine samples of those Leptospira-positive dogs examined under dark-field microscopy, and no clinical signs of disease were observed either. Six additional isolates were obtained: two came from asymptomatic carrier dogs (CEL60 and UADY22); another isolate came from an asymptomatic dog that was a pack companion of a clinically ill dog with fatal leptospirosis (AGFA24); and finally, three isolates were taken from dogs that died of leptospirosis (LOCaS59, Citlalli, and Nayar1). Nine out of the ten isolates were identified as being from the serogroup Canicola via cross-absorption MAT using reference strains and specific antisera, and their identity was genetically confirmed as Canicola ST34 via multi-locus sequencing typing (MLST). In contrast, the isolate Nayar1 was identified as serovar Copenhageni ST2. Interestingly, the asymptomatic dogs from which Leptospira isolates were recovered consistently showed high antibody titers in the microscopic agglutination test (MAT), revealing values of at least 1:3200 against serogroup Canicola and lower titer values against other serogroups. Isolates showed different virulence levels in the hamster model. Taken as a whole, all these findings confirmed that dogs may act as asymptomatic carriers of pathogenic leptospires and possibly spread them out to the environment, thus representing an active public health risk. The results also showed that the Canicola ST34 clone is the most prevalent Leptospira serovar in dogs in Mexico, and finally that the old-fashioned MAT is a good alternative for the detection of presumptive Leptospira asymptomatic carrier dogs.
LANGUAGE OF ORIGINAL DOCUMENT: English

Ahmed S.H., Shaikh T.G., Waseem S., Zahid M., Ahmed K.A.H.M., Ullah I., Al Hasibuzzaman Md.
Water-related diseases following flooding in South Asian countries – a healthcare crisis
(2024) European Journal of Clinical and Experimental Medicine, 22 (1), pp. 232 - 242
DOI: 10.15584/ejcem.2024.1.29
ABSTRACT: Introduction and aim. Industrialization and elevated greenhouse gas emissions pose significant threats to the environment, raising atmospheric carbon dioxide levels and leading to climate change. Climate

change may impact human health either directly via increasing extreme weather frequency and altering disease patterns or indirectly via social institutions and disrupted global supply chain resulting in consequences like undernutrition Material and methods. This review conducted a comprehensive literature search on PubMed, Google Scholar, and Cochrane Library, from inception to September 2022, using relevant keywords. Analysis of the literature. Massive flooding in South Asia is leading to a surge in water-related diseases. Cholera outbreaks have occurred in countries like Pakistan, India, and Bangladesh following floods, and waterborne diseases like typhoid, rotavirus, hepatitis A, and leptospirosis are prevalent in flood-affected regions. Additionally, Cryptosporidium, Campylobacter, Shigella, and Polio outbreaks are reported. Water-scarce diseases, including scabies, impetigo, and cellulitis, are also on the rise in flood-affected areas. Water-based diseases, such as dracunculiasis, schistosomiasis, and Leishmaniasis, pose significant risks. Vector-borne diseases, including malaria, dengue, and Leishmaniasis, are becoming more prevalent due to flooded areas providing breeding grounds for disease vectors like mosquitoes and sandflies. These diseases are now more common in flood-affected regions, affecting millions of people. Conclusion. Urgent measures are needed, including early warning systems, resilient infrastructure, drainage maintenance, and stricter land-use regulations, to reduce the impact of these natural disasters. International cooperation and immediate action at national and global levels are essential to mitigate the health crises caused by flooding and other natural disasters.

LANGUAGE OF ORIGINAL DOCUMENT: English

Barbosa J.D., Martins F.M.S., Vieira E.V., Silva R.P.D.L., Bomjardim H.D.A., Silva M.X., Salvarani F.M.

Anti-Leptospira Antibodies in Buffaloes on Marajó Island

(2023) Ruminants, 3 (3), pp. 182 - 188

DOI: 10.3390/ruminants3030017

ABSTRACT: Leptospirosis is a zoonotic disease that has a cosmopolitan geographical distribution, reported in domestic and wild animals, which act as reservoirs and contribute to the spread of microorganisms in the environment. In Brazil, studies on the occurrence of leptospirosis in buffaloes in the Amazon Biome are scarce. The objective of this study was to determine the occurrences of antibodies against Leptospira spp., including serovar Hardjo (Bolivia), isolated from cattle in Brazil and not yet tested in buffaloes. A total of 387 blood serum samples of animals from nine municipalities on Marajó Island, State of Pará, northern Brazil, were obtained from a biological sample bank and analyzed using the microscopic agglutination test (MAT). Serology revealed 91.5% (387/354) of the animals tested positive for anti-Leptospira antibodies. The presence of various detected serovars may have been related to the local practice of combined rearing of different livestock species, as well as to the contact with wild animals and rodents from adjacent forest areas, all factors that likely facilitated the epidemiological chain of the disease in buffaloes. Among the serovars tested, the serovar Hardjo (Bolivia) was the most prevalent, which was present in 79.3% of the reactive buffaloes. It was important to carry out serological and bacteriological surveys in order to identify the serovars that occurred in the herds, with the objective of designing efficient strategies to control leptospirosis in the production of buffaloes.

LANGUAGE OF ORIGINAL DOCUMENT: English

Walter-Weingärtner J., Bergmann M., Hartmann K.

Overview on utility of in-house tests for detection of systemic infectious diseases in dogs [Übersicht über Einsatzmöglichkeiten von In-house-Tests zum Nachweis von systemischen Infektionskrankheiten beim Hund]

(2024) Tierarztliche Praxis Ausgabe K: Kleintiere - Heimtiere, 52 (2), pp. 98 - 113
DOI: 10.1055/a-2289-1927

ABSTRACT: For detection of infectious diseases, several point-of-care (POC) tests are on the market in addition to methods performed in commercial laboratories. These POC tests are based on enzyme-linked immunosorbent assay (ELISA) or other immunochromatographic technologies and present results within few minutes in veterinary practice. This article gives an overview of the utility of numerous POC tests of different manufacturers for detection of parvovirus antigen in feces, Dirofilaria (D.) immitis antigen in blood as well as antibodies against Borrelia (B.) burgdorferi, Anaplasma (A.) spp., Ehrlichia (E.) spp., Leptospira (L.) spp. and Leishmania (L.) infantum in blood (single or in different combinations). Sensitivity and specificity of these tests are important for their usefulness in veterinary practice. Furthermore, presence of antibodies or detection of antigen has to correlate with the presence of clinical signs. POC tests for detection of canine parvovirus antigen have a very high specificity, the sensitivity of all evaluated POC tests, however, is very low. POC tests for detection of D. immitis antigen have a very high sensitivity and specificity. As they detect antigen from the uterus of female adult parasites, test results are negative when only very few female or only male adults are present. POC tests for detection of antibodies against B. burgdorferi only indicate contact with Borrelia spp. and do not prove clinical Lyme disease, as the infection only extremely rarely causes clinical signs. POC tests for detection of antibodies against A. phagocytophilum are also not suitable for diagnosis of clinical anaplasmosis. Infections with A. phagocytophilum only lead to clinical disease in very rare cases and in these, clinical signs occur before the development of antibodies. POC tests for detection of antibodies against E. canis have a very high sensitivity as well as specificity. POC tests for detection of antibodies against L. infantum and Leptospira species (spp.) show a very high specificity and a high sensitivity. However, Leptospira spp. antibody-positive results may occur following vaccination, as the POC tests cannot distinguish between field and vaccination strains.

LANGUAGE OF ORIGINAL DOCUMENT: German

Shaik R.S., Manorenj S., Marupaka S.K.

Acute Necrotizing Encephalopathy of Childhood (ANEC) in a Patient with Dengue and Leptospirosis

(2024) Neurology India, 72 (2), pp. 433 - 434
DOI: 10.4103/ni.ni_984_21
LANGUAGE OF ORIGINAL DOCUMENT: English

de Assis Noman G., Lacerda de Moura B.E., Vieira M.L.

Leptospiral LipL45 lipoprotein undergoes processing and shares structural similarities with bacterial sigma regulators.

(2024) Biochemical and Biophysical Research Communications, 717, art. no. 150057
DOI: 10.1016/j.bbrc.2024.150057

ABSTRACT: Leptospirosis is a widespread zoonotic infectious disease of human and veterinary concern caused by pathogenic spirochetes of the genus Leptospira. To date, little progress towards understanding leptospiral pathogenesis and identification of virulence factors has been made, which is the main bottleneck for developing effective measures against the disease. Some leptospiral proteins, including LipL32, Lig proteins, LipL45, and LipL21, are being considered as potential virulence factors or vaccine candidates. However, their function remains to be established. LipL45 is the most expressed membrane lipoprotein in leptospires, upregulated when the bacteria are transferred to temperatures resembling the host, expressed during infection, suppressed after culture attenuation, and known to suffer processing in vivo and in vitro, generating fragments. Based on body of evidence, we hypothesized that the LipL45 processing might occur by an auto-cleavage event, deriving two fragments. The results presented here, based on bioinformatics, structure modeling analysis, and experimental data, corroborate that LipL45 processing probably includes a self-catalyzed non-proteolytic event and suggest the participation of LipL45 in cell-surface signaling pathways, as the protein shares structural similarities with bacterial sigma regulators. Our data indicate that LipL45 might play an important role in response to environmental conditions, with possible function in the adaptation to the host.
LANGUAGE OF ORIGINAL DOCUMENT: English

Vysochanska V.V., Babych M.S., Kohutych A.I., Halamba A.A.

A case of leptospirosis in Transcarpathia complicated with Jarisch-Herxheimer reaction

(2024) Wiadomosci lekarskie (Warsaw, Poland: 1960), 77 (3), pp. 608 - 612
DOI: 10.36740/WLek202403134
ABSTRACT: A case report of Jarisch-Herxheimer (JHR) reaction on a 10th day of Leptospirosis caused by Leptospira Pomona. JHR occurs as a complication of an antibiotic treatment of various spirochetes and may lead to respiratory distress syndrome, renal failure, hepatic insufficiency, and multiple organ failure. This case represents a skin and cardio-vascular form of JHR with no lung involvement. The patient was treated with benzylpenicillin and low dexamethasone doses for 5th day of the disease with a shift to ceftriaxone and high doses of methylprednisolone. The fastest diagnosis of a sporadic zoonotic disease, early start of antibiotic therapy, and adequate doses of corticosteroids are key to the successful treatment of leptospirosis.
LANGUAGE OF ORIGINAL DOCUMENT: English

Sundarsingh V., Kumar R.M., Kulkarni M., Mammoo F.R., Rodrigues P.R., Prashanth Y.M.

Unusual presentation of Sjogren’s syndrome during pregnancy: a case report

(2024) Journal of Medical Case Reports, 18 (1), art. no. 236
DOI: 10.1186/s13256-024-04563-7
ABSTRACT: Background: Pregnancy imposes significant physiological changes, including alterations in electrolyte balance and renal function. This is especially important because certain disorders might worsen and make people more susceptible to electrolyte abnormalities. One such condition is Sjogren's syndrome (SS), an autoimmune disease that can cause distal renal tubular acidosis (dRTA). This case report offers a unique perspective on the intricate physiological interplay during pregnancy, emphasizing the critical importance of recognizing and managing electrolyte abnormalities, particularly in the context of autoimmune disorders such as Sjogren’s syndrome. Case presentation: We report a case of a 31-year-old pregnant Indian

woman at 24 weeks gestation presenting with fever, gastrointestinal symptoms, and progressive quadriparesis followed by altered sensorium. Severe hypokalaemia and respiratory acidosis necessitated immediate intubation and ventilatory support. Investigations revealed hypokalaemia, normal anion gap metabolic acidosis, and positive autoimmune markers for SS. Concurrently, she tested positive for IgM Leptospira. Management involved aggressive correction of electrolyte imbalances and addressing the underlying SS and leptospirosis. Conclusion: This case underscores that prompt recognition and management are paramount to prevent life-threatening complications in pregnant patients with autoimmune disease. This report sheds light on the unique challenge of managing hypokalaemic quadriparesis in the context of Sjogren's syndrome during pregnancy.
LANGUAGE OF ORIGINAL DOCUMENT: English

Douchet L., Menkes C., Herbreteau V., Larrieu J., Bador M., Goarant C., Mangeas M.
Climate-driven models of leptospirosis dynamics in tropical islands from three oceanic basins
(2024) PLoS Neglected Tropical Diseases, 18 (4), art. no. e0011717
DOI: 10.1371/journal.pntd.0011717
ABSTRACT: Background Leptospirosis is a neglected zoonosis which remains poorly known despite its epidemic potential, especially in tropical islands where outdoor lifestyle, vulnerability to invasive reservoir species and hot and rainy climate constitute higher risks for infections. Burden remains poorly documented while outbreaks can easily overflow health systems of these isolated and poorly populated areas. Identification of generic patterns driving leptospirosis dynamics across tropical islands would help understand its epidemiology for better preparedness of communities. In this study, we aim to model leptospirosis seasonality and outbreaks in tropical islands based on precipitation and temperature indicators. Methodology/Principal findings We adjusted machine learning models on leptospirosis surveillance data from seven tropical islands (Guadeloupe, Reunion Island, Fiji, Futuna, New Caledonia, and Tahiti) to investigate 1) the effect of climate on the disease's seasonal dynamic, i.e., the centered seasonal profile and 2) inter-annual anomalies, i.e., the incidence deviations from the seasonal profile. The model was then used to estimate seasonal dynamics of leptospirosis in Vanuatu and Puerto Rico where disease incidence data were not available. A robust model, validated across different islands with leave-island-out cross-validation and based on current and 2-month lagged precipitation and current and 1-month lagged temperature, can be constructed to estimate the seasonal dynamic of leptospirosis. In opposition, climate determinants and their importance in estimating inter-annual anomalies highly differed across islands. Conclusions/Significance Climate appears as a strong determinant of leptospirosis seasonality in tropical islands regardless of the diversity of the considered environments and the different lifestyles across the islands. However, predictive and expandable abilities from climate indicators weaken when estimating inter-annual outbreaks and emphasize the importance of these local characteristics in the occurrence of outbreaks.
LANGUAGE OF ORIGINAL DOCUMENT: English

Nakano R., Oyamada Y., Ozuru R., Yoshimura M., Hiromatsu K.
Objectification of evaluation criteria in microscopic agglutination test using deep learning
(2024) Journal of Microbiological Methods, 222, art. no. 106955
DOI: 10.1016/j.mimet.2024.106955

ABSTRACT: We aim to objectify the evaluation criteria of agglutination rate estimation in the Microscopic Agglutination Test (MAT). This study proposes a deep learning method that extracts free leptospires from dark-field microscopic images and calculates the agglutination rate. The experiments show the effect of objectification with real pictures.
LANGUAGE OF ORIGINAL DOCUMENT: English

Shankar U.N., Shiraz M., Kumar P., Akif M.

A comprehensive in silico analysis of putative outer membrane and secretory hydrolases from the pathogenic Leptospira: possible implications in pathogenesis

(2024) Biotechnology and Applied Biochemistry
DOI: 10.1002/bab.2596
ABSTRACT: Outer surface/membrane and virulent secretory proteins are primarily crucial for pathogenesis. Secreted and outer membrane hydrolases of many pathogens play an important role in attenuating the host immune system. Leptospira expresses many such proteins, and few have been characterized to display various roles, including host immune evasion. However, identification, classification, characterization, and elucidation of the possible role of Leptospira's outer membrane and secretory hydrolases have yet to be explored. In the present study, we used bioinformatics tools to predict exported proteins from the pathogenic Leptospira proteome. Moreover, we focused on secretory and outer membrane putative hydrolases from the exported proteins to generate a deeper understanding. Our analysis yielded four putative outer/secretory hydrolases, LIC_10995, LIC_11183, LIC_11463, and LIC_12988, containing α/β hydrolase fold and displayed similarity with lipase motif. Moreover, their conservation analysis of the predicted hydrolases across the spectrum of different Leptospira species showed high clustering with the pathogenic species. Outer membrane and secretory proteins with lipolytic activity may have a role in pathogenesis. This is the first bioinformatics analysis of secretory and outer membrane α/β hydrolases from leptospiral species. However, experimental studies are indeed required to unravel this possibility.
LANGUAGE OF ORIGINAL DOCUMENT: English

Loria J., Reis L., Roussouliéres I., Pinto P.H.N., Balaro M.F.A., Lilenbaum W.

Genital route in experimental infection, a promising approach to study genital leptospirosis in ruminants

(2024) Veterinary Journal, 305, art. no. 106127
ABSTRACT: Infection by Leptospira sp., mainly strains from the Sejroe serogroup, impairs the reproductive efficiency of ruminants leading to economic losses. Although the majority of experimental studies use the intraperitoneal route of leptospiral infection, it has been suggested that natural infection occurs frequently by sexual transmission. Thus, we assessed the genital route of infection to study genital leptospirosis in the sheep model. A strain of L. borgpetersenii serogroup Sejroe, serovar Hardjobovis was inoculated in 18 ewes, divided into three groups for inoculation: intraperitoneal (n=6; Gip), cervical superficial (genital) (n=6; Ggen) and conjunctival (n=6; Gconj). Monthly, for 90 days, blood samples were collected for serology (MAT) and PCR was performed on urine, cervical-vaginal mucus, and uterine fragments. All ewes were successfully infected, independently of the infection route. Gip and Ggen did not differ throughout the experiment, either on seroconversion or on PCR positivity on urine or genital samples. In contrast, Gconj presented fewer

seroreactive animals (P<0.05) and fewer PCR-pos on genital samples than the other groups. The results obtained demonstrated that, although all groups presented both urinary and genital infections, the genital route was more efficient and did not differ from the traditional intraperitoneal. It indicates that genital via, besides being a naturally occurring transmission via, represents a promising and interesting route regarding future studies related to genital leptospirosis in ruminants, and its use should be encouraged.
LANGUAGE OF ORIGINAL DOCUMENT: English

Liu C., Xu M., Gao Q., Tao W., Yuan Y., Lv Y.

Joinpoint regression analysis of the epidemic trend of natural focal diseases in China from 2011 to 2020

(2024) Journal of Medical Pest Control, 40 (5), pp. 440 - 444
DOI: 10.7629/yxdwfz202405006
ABSTRACT: Objective To analyze the epidemic trend of natural focal diseases in China from 2011 to 2020, and to provide a scientific basis for the prevention and control of natural focal diseases in military training. Methods A Joinpoint regression model was used to fit the annual incidence data of natural focal diseases in China from 2011 to 2020, to analyze the incidence trend of natural focal diseases in China from 2011 to 2020, and to calculate the annual percent change (APC) and its 95%CI. Results Of the 15 notifiable legally natural focal diseases reported in China from 2011 to 2020, the top three incidence rates were brucellosis, epidemic hemorrhagic fever, and dengue fever,and the top three fatality rates were rabies,human infection with the highly pathogenic avian influenza and plague, respectively. From 2011 to 2020, the incidence rates of plague and human infection with the highly pathogenic avian influenza increased year by year (tplague = 2.4, P<0.05; thuman infection with the highly pathogenic avian influenza = 14.3, P <0. 05) in China,while the incidence rates of rabies,leptospirosis and malaria decreased year by year (trabies = - 30. 7, P < 0. 05; tleptospirosis = - 2. 9, P < 0.05; tmalaria = - 2. 9, P<0. 05). The incidence rate of schistosomiasis increased year by year before 2015, and then decreased (t2011-2015 =9. 9, P<0. 05; t2015-2020 =-9. 8, P<0. 05). Before 2017, the incidence rate of typhus decreased year by year (t2011-2017 = -10. 1, P<0. 05), while the incidence of hydatidosis increased year by year (t2011-2017 = 3. 5, P<0. 05). Conclusion The incidence situation of natural focal diseases in China from 2011 to 2020 remains serious,which suggests that the focus groups,especially army officers and soldiers,should be required to take targeted prevention and control measures when they entered natural focus.
LANGUAGE OF ORIGINAL DOCUMENT: Chinese

Freitas R.S., Rocha K.D.S., Monteiro L.H., Alexandre T.F., Monteiro T.R.M., Honorio B.E.T., Gripp M.C., Guimarães C.D.D.O., Palha M.D.D.C., Gonçalves T.D.S., Scofield A., Moraes C.C.G.D.

Detection of Pathogenic Leptospira in Captive Chelonians (Kinosternon scorpioides—Linnaeus, 1766) in the Brazilian Amazon

(2024) Animals, 14 (9), art. no. 1334
DOI: 10.3390/ani14091334
ABSTRACT: Leptospirosis is a zoonosis of great importance for One Health. In this context, the Amazonian biome may harbor numerous hosts for Leptospira spp. that contribute to the maintenance of the pathogen in the environment. Some reptiles, such as chelonians, have been little studied in terms of their involvement with leptospires. The objective of this study was to detect Leptospira spp. DNA in Kinosternon scorpioides turtles

kept in captivity in a region of the Brazilian Amazon. A total of 147 samples of blood (n = 40), cloacal fluid (n = 27), cloacal lavage (n = 40), and stomach (n = 40) were collected from 40 chelonians. After DNA extraction, the samples were subjected to amplification of a 331 base pair product of the 16S rRNA gene using the Lep1 and Lep2 primers. PCR products were Sanger sequenced, assembled, and subjected to online blast search and phylogenetic analysis. Of the animals tested, 40% (16/40, 95% confidence interval [CI]: 25–55) had at least one or two samples positive for Leptospira spp. Considering the total number of samples collected, 12.93% (19/147) were positive, being blood clots (27.5%; 11/40), followed by cloacal washings (10%; 4/40), cloacal fluid (11.11%; 3/27) and gastric washings (2.5%; 1/40). Of these, 11 samples were sequenced and showed 99% to 100% identity with Leptospira interrogans sequences, which was confirmed by phylogenetic analysis. This is the first study to detect pathogenic Leptospira DNA in chelonians in a region of the Brazilian Amazon. It has been concluded that K. scorpioides turtles in captivity have been exposed to pathogenic Leptospira.
LANGUAGE OF ORIGINAL DOCUMENT: English

Kim J., Kim J.W., Lee K.-K., Lee K., Ku B.-K., Kim H.-Y.

Laboratory investigation of causes of bovine abortion and stillbirth in the Republic of Korea, 2014–2020

(2024) Journal of Veterinary Diagnostic Investigation
DOI: 10.1177/10406387241239919
ABSTRACT: Bovine abortion is a critical problem in the cattle industry. Identifying causes of abortion is key to establishing appropriate herd management and prevention strategies. We used pathology examinations, detection of etiologic agents, and serology to determine the cause of bovine abortions in Korea. We analyzed 360 abortion and stillbirth cases submitted to the Animal and Plant Quarantine Agency from December 2014 to January 2020. The putative cause of abortion was identified in 140 of 360 (38.9%) cases; 124 of the 140 (88.6%) cases were attributed to infections. The most common etiologic agents detected were bovine viral diarrhea virus (65 of 360; 18.1%), Coxiella burnetii (19 of 360; 5.3%), Leptospira spp. (13 of 360; 3.6%), Listeria monocytogenes (9 of 360; 2.5%), and Neospora caninum (8 of 360; 2.2%). Minor abortifacient pathogens included Brucella abortus (2 of 360; 0.6%), bovine alphaherpesvirus 1 (2 of 360; 0.6%), Akabane virus (2 of 360, 0.6%), and bovine ephemeral fever virus (1 of 360; 0.3%). Non-infectious conditions included congenital anomalies (7 of 360; 1.9%), goiter (7 of 360; 1.9%), and vitamin A deficiency (2 of 360; 0.6%). Our diagnostic rate in cases with placenta submitted (42 of 86; 48.8%) was significantly higher than in cases without placenta (98 of 274; 35.8%), which highlights the value of submitting placentas. Our results confirm the status of the large variety of causative agents associated with abortions in cattle in Korea.
LANGUAGE OF ORIGINAL DOCUMENT: English

Saliba J., Vassallo C., Saliba J., Bardon M.P.

Leptospirosis: a clinical and diagnostic challenge

(2024) BMJ Case Reports, 17 (5), art. no. e256905
DOI: 10.1136/bcr-2023-256905
ABSTRACT: We present the case of a man in his early 50s who presented with a history of fever, malaise and jaundice. Initial investigations showed liver and renal dysfunction with no discernible cause for the septic

process. On starting intravenous antibiotics, the patient developed a septic-shock-like reaction requiring transfer to intensive care. A diagnosis of leptospirosis was eventually established through an extensive and thorough history leading to a stepwise approach to investigations. Treatment targeting leptospirosis was delivered with noticeable clinical improvement.
LANGUAGE OF ORIGINAL DOCUMENT: English

Petakh P., Behzadi P., Oksenych V., Kamyshnyi O.
Current treatment options for leptospirosis: a mini-review
(2024) Frontiers in Microbiology, 15, art. no. 1403765
DOI: 10.3389/fmicb.2024.1403765
ABSTRACT: Leptospirosis, one of the most common global zoonotic infections, significantly impacts global human health, infecting more than a million people and causing approximately 60,000 deaths annually. This mini-review explores effective treatment strategies for leptospirosis, considering its epidemiology, clinical manifestations, and current therapeutic approaches. Emphasis is placed on antibiotic therapy, including recommendations for mild and severe cases, as well as the role of probiotics in modulating the gut microbiota. Furthermore, novel treatment options, such as bacteriophages and newly synthesized/natural compounds, are discussed, and the findings are expected to provide insights into promising approaches for combating leptospirosis.
LANGUAGE OF ORIGINAL DOCUMENT: English

Ifejube O.J., Kuriakose S.L., Anish T.S., van Westen C., Blanford J.I.
Analysing the outbreaks of leptospirosis after floods in Kerala, India
(2024) International Journal of Health Geographics, 23 (1), art. no. 11
DOI: 10.1186/s12942-024-00372-9
ABSTRACT: A growing number of studies have linked the incidence of leptospirosis with the occurrence of flood events. Nevertheless, the interaction between flood and leptospirosis has not been extensively studied to understand the influence of flood attributes in inducing new cases. This study reviews leptospirosis cases in relation to multiple flood occurrences in Kerala, India. Leptospirosis data were obtained for three years: 2017 (non-flood year) and two years with flooding—2018 (heavy flooding) and 2019 (moderate flooding). We considered the severity of flood events using the discharge, duration and extent of each flooding event and compared them with the leptospirosis cases. The distribution of cases regarding flood discharge and duration was assessed through descriptive and spatiotemporal analyses, respectively. Furthermore, cluster analyses and spatial regression were completed to ascertain the relationship between flood extent and the postflood cases. This study found that postflood cases of leptospirosis can be associated with flood events in space and time. The total cases in both 2018 and 2019 increased in the post-flood phase, with the increase in 2018 being more evident. Unlike the 2019 flood, the flood of 2018 is a significant spatial indicator for postflood cases. Our study shows that flooding leads to an increase in leptospirosis cases, and there is stronger evidence for increased leptospirosis cases after a heavy flood event than after a moderate flooding event. Flood duration may be the most important factor in determining the increase in leptospirosis infections.
LANGUAGE OF ORIGINAL DOCUMENT: English

Veenhuis S.J.G., van der Donk C.F.M., Semmekrot B.A., Voorhoeve P.G.

Rat bite fever in children [Rattenbeetziekte bij kinderen]

(2024) Nederlands tijdschrift voor geneeskunde, 168

ABSTRACT: BACKGROUND: Worldwide, disease in children due to exposure to rats is increasing, also in the Netherlands. Not only the generally known pathogen Leptospira should be considered, also S. moniliformis, Yersinia pestis, Lymphocytic choriomeningitis virus, Hantavirus, Francisella tularensis and Pasteurella multocida are also known rat-associated zoonosis. CASE DESCRIPTION: An 12-year-old boy visited the pediatrician with fever, headache and nausea, followed by generalized erythema and arthritis. The boy had a pet rat. The patient's blood culture was positive for S. moniliformis. The patient was treated with antibiotics and made a full recovery. CONCLUSION: Just like many rat-associated diseases have 'rat-bite fever' caused by S. moniliformis an nonspecific clinical presentation. It is not necessary to have had a rat bite, to develop rat-bite fever. Better awareness and knowledge about rat related diseases should contribute to earlier diagnosis and treatment. Which is of great importance because of increased morbidity and mortality associated to rat related diseases.

LANGUAGE OF ORIGINAL DOCUMENT: Dutch

Miotto B.A., Camelo Q.C., Grolla A.C.M.M., de Oliveira A.B.M., Silva M.M.B., Hagiwara M.K., Esteves S.B.

Current knowledge on leptospirosis in cats: a systematic review with metanalysis on direct detection, serological response, and clinical data

(2024) Research in Veterinary Science, 174, art. no. 105292

ABSTRACT: Leptospirosis is a neglected bacterial zoonosis that affects a wide range of mammals, with important implications from a One Health perspective. Over the past years feline leptospirosis has gained increased attention in the scientific community. Here we describe a systematic review with meta-analysis that followed the PRISMA guidelines, with an additional PROSPERO registration. The study provides global seropositivity, urinary shedding rates, global serogroup distribution, descriptive data of leptospires that had been isolated from cats and clinical and laboratory features presented by symptomatic cats with acute disease. The search was carried out in six different databases, with the identification of 79 reports describing leptospiral infection in cats. The pooled frequency of seroreactive cats was 11% (95% CI: 9%–13%), with Javanica and Pomona as the most frequent serogroups found. Frequency for urinary shedding was 8% (95% CI: 5%–10%), with L. interrogans identified in most samples. A total of 16 isolates were isolated from cats, with Bataviae as the most frequent serogroup. Twenty symptomatic cats with confirmed leptospiral infection were identified. Anorexia, lethargy, polydipsia, and bleeding disorders were the clinical signs most frequently reported. The results suggest that cats from some locations are exposed to leptospires and may act as urinary shedders of this pathogen, thus indicating a possible role of this species in disease transmission. Clinical data indicates that acute infection is mostly atypical when compared to dogs, and due to difficulties to define an archetypal clinical presentation in cats, feline leptospirosis is likely to be underdiagnosed disease in this species.

LANGUAGE OF ORIGINAL DOCUMENT: English

Pereira P.V.D.S., Di Azevedo M.I.N., Arashiro E.K.N., Watanabe Y.F., Correia L.F.L., Lilenbaum W., Souza-Fabjan J.M.G.

The presence of Leptospira spp. in the follicular fluid of naturally infected cows affects the overall efficiency of the in vitro embryo production technique

(2024) Animal Reproduction Science, 266, art. no. 107492

DOI: 10.1016/j.anireprosci.2024.107492

ABSTRACT: The relationship between Leptospira infection and reproductive failures, as well as the mechanisms that lead to it, has not yet been fully established. It has been hypothesized that the presence of Leptospira spp. in the follicular fluid (FF) could impair the oocyte developmental competence. Thus, the impact of the presence of Leptospira spp. in the FF on in vitro embryo production (IVEP) outcomes was assessed. Dairy cows (n=244) from different farms were subjected to ovum pick-up for cumulus-oocyte complexes (COCs) collection. After PCR analysis of the FF, cows were retrospectively allocated into either: positive (POS-FF) or negative (NEG-FF) group. Statistical modeling was conducted using the farm, PCR result, and laboratory in which the IVEP was performed as effects. Noteworthy, 26.6% of the animals were positive for Leptospira spp., and 70% of farms had at least one POS-FF cow in the herd. POS-FF cows had a lower number of COCs recovered (22.6 ± 1.2 vs 15.0 ± 2.8, P=0.036), rate of viable COCs (85.6 ± 0.9% vs 78.1 ± 2.8%, P=0.015), number of good-quality COCs (16.0 ± 0.9 vs 9.8 ± 2.1, P=0.026), cleaved embryos (11.9 ± 0.7 vs 7.5 ± 1.5, P=0.032), and blastocysts (7.3 ± 0.4 vs 2.3 ± 0.7, P=0.044) yielded per cow. In conclusion, the presence of Leptospira spp. in the FF of naturally infected cows impaired the amount of COCs recovered, decreasing the overall IVEP efficiency

LANGUAGE OF ORIGINAL DOCUMENT: English

Hermawati B.D., Hapsari B.D.A., Wulandari E.L., Prabowo N.A., Sukmagautama C., Putri D.P., Apriningsih H., Rahma A.A., Nafila R.R.

Weil’s disease with multiple organ dysfunction, community-acquired pneumonia and septic shock: The role of rapid diagnosis and management

(2024) Narra J, 4 (1), art. no. e587

DOI: 10.52225/narra.v4i1.587

ABSTRACT: Leptospirosis is an uncommon infectious illness – a spirochetal zoonosis – caused by Leptospira species and the primary cause of human leptospirosis is exposure to the urine of infected rodents. Clinical manifestations of human leptospirosis are diverse, ranging from asymptomatic infection to severe life-threatening with multiorgan dysfunction. The severe condition is known as Weil's disease, which is characterized by feverish illness with jaundice, acute kidney damage, and bleeding. The aim of this case report was to present a Weil's disease which occurred simultaneously with a community-acquired pneumonia (CAP) resulting in serious complications. A 41-year-old man with Weil's disease, as well as CAP caused by Streptococcus pneumoniae, and septic shock was presented. The patient was treated accordingly after establishing the diagnosis through history taking, physical examination, and laboratory tests. In this instance, the score for diagnosing leptospirosis based on Modified Faine's Criteria was calculated resulting possible diagnoses; and therefore, therapeutic management was initiated. Despite presenting with severe symptoms, the patient recovered completely after receiving antibiotics and supportive care. This study highlights that when

a patient has Weil's disease and a CAP infection, which could cause unfavorable consequence, a prompt diagnosis and proper treatment could result satisfied patient recovery.
LANGUAGE OF ORIGINAL DOCUMENT: English

Macchi M.V., Suanes A., Salaberry X., Dearmas B.E., Rivas E., Piaggio J., Gil A.D.
Leptospirosis as a cause of infertility in Uruguayan beef cattle
(2024) Preventive Veterinary Medicine, 228, art. no. 106227
DOI: 10.1016/j.prevetmed.2024.106227
ABSTRACT: Leptospirosis, caused by pathogenic spirochetes of the genus Leptospira spp., is a globally significant zoonotic disease that affects humans and animals. In cattle, leptospirosis is associated not only with overt clinical manifestations but also with reproductive diseases, including infertility. This study assesses the potential correlation between leptospirosis and infertility in Uruguayan beef cattle. A case-control study involved 31 beef herds with no prior history of Leptospira vaccination. In each herd, veterinarians identified 10 non-pregnant (cases) and 25 pregnant cows (controls) using ultrasound, and blood and urine samples were collected from each cow. Serological diagnosis was performed using the Microscopic Agglutination Test (MAT), and quantitative PCR (qPCR) was used to assess Leptospira excretion. Additionally, antibodies against bovine viral diarrhea virus (BVDV) and infectious bovine rhinotracheitis (IBR) were tested. The results demonstrated an association between seropositivity to the Sejroe serogroup (cut-off 1:200) and infertility in cattle (OR=1.31; p-value=0.06). Furthermore, the level of Leptospira excretion (qPCR) in urine was associated with increased infertility risk, with cows excreting over 100 copies per mL of urine having the highest odds of infertility (OR=2.34; p-value<0.01). This study suggests a potential association between leptospirosis and infertility in Uruguayan beef cattle, emphasizing the importance of both serological and molecular diagnostics for assessing reproductive health in cattle herds. Future research should explore the impact of Leptospira serogroups on other reproductive disorders in cattle.
LANGUAGE OF ORIGINAL DOCUMENT: English

Obregón-Giraldo M., Barrientos-Álvarez L.S., Henao-Villada A., Valencia-Palacio E., Trujillo-Honeysberg M.
Leptospirosis in a school-age patient [Leptospirosis en paciente en edad escolar]
(2023) Revista Mexicana de Pediatria, 90 (5), pp. 191 - 194
DOI: 10.35366/115503
ABSTRACT: Introduction: leptospirosis is one of the most widely distributed zoonotic diseases in the world, however, its diagnosis can be difficult because the clinical manifestations are diverse. We present a school-age patient with leptospirosis, to promote early diagnosis in similar cases. Case presentation: 11-year-old male patient with fever, asthenia, adynamia, headache, edema in the lower limbs, choluria, myalgia in the gastrocnemius, as well as rash on the trunk and all four extremities. Different infections were ruled out, such as dengue, COVID-19, and syphilis. Given the persistence of symptoms for more than seven days, and due to the history of contact with domestic animals, leptospirosis was suspected. It was confirmed by elevation of specific IgM antibodies for Leptospira and a positive urine PCR result for Leptospira spp. 48 hours after starting antimicrobial treatment, the patient began to improve, reaching complete resolution. Conclusions: leptospirosis is a disease that has a variable clinical course, so it should always be considered as part of the differential diagnosis of patients with febrile syndrome.

LANGUAGE OF ORIGINAL DOCUMENT: Spanish

Hamond C., Adam E.N., Stone N.E., LeCount K., Anderson T., Putz E.J., Camp P., Hicks J., Stuber T., van der Linden H., Bayles D.O., Sahl J.W., Schlater L.K., Wagner D.M., Nally J.E.

Identification of equine mares as reservoir hosts for pathogenic species of Leptospira

(2024) Frontiers in Veterinary Science, 11, art. no. 1346713

DOI: 10.3389/fvets.2024.1346713

ABSTRACT: Equine leptospirosis can result in abortion, stillbirth, neonatal death, placentitis, and uveitis. Horses can also act as subclinical reservoir hosts of infection, which are characterized as asymptomatic carriers that persistently excrete leptospires and transmit disease. In this study, PCR and culture were used to assess urinary shedding of pathogenic Leptospira from 37 asymptomatic mares. Three asymptomatic mares, designated as H2, H8, and H9, were PCR-positive for lipL32, a gene specific for pathogenic species of Leptospira. One asymptomatic mare, H9, was culture-positive, and the recovered isolate was classified as L. kirschneri serogroup Australis serovar Rushan. DNA capture and enrichment of Leptospira genomic DNA from PCR-positive, culture-negative samples determined that asymptomatic mare H8 was also shedding L. kirschneri serogroup Australis, whereas asymptomatic mare H2 was shedding L. interrogans serogroup Icterohaemorrhagiae. Sera from all asymptomatic mares were tested by the microscopic agglutination test (MAT) and 35 of 37 (94.6%) were seropositive with titers ranging from 1:100 to 1:3200. In contrast to asymptomatic mares, mare H44 presented with acute spontaneous abortion and a serum MAT titer of 1:102,400 to L. interrogans serogroup Pomona serovar Pomona. Comparison of L. kirschneri serogroup Australis strain H9 with that of L. interrogans serogroup Pomona strain H44 in the hamster model of leptospirosis corroborated differences in virulence of strains. Since lipopolysaccharide (LPS) is a protective antigen in bacterin vaccines, the LPS of strain H9 (associated with subclinical carriage) was compared with strain H44 (associated with spontaneous abortion). This revealed different LPS profiles and immunoreactivity with reference antisera. It is essential to know what species and serovars of Leptospira are circulating in equine populations to design efficacious vaccines and diagnostic tests. Our results demonstrate that horses in the US can act as reservoir hosts of leptospirosis and shed diverse pathogenic Leptospira species via urine. This report also details the detection of L. kirschneri serogroup Australis serovar Rushan, a species and serotype of Leptospira, not previously reported in the US.

LANGUAGE OF ORIGINAL DOCUMENT: English

Puentes M.M.M., Camargo K.D.J., Roberto Y.A.M., Guzman-Barragan B.L., Tafur-Gomez G.A., Clavijo N.F.S.

Infection and re-infection of Leptospira spp. in stray dogs and cats from Bogota, Colombia

(2024) Veterinary World, 17 (5), pp. 973 - 980

ABSTRACT: Background and Aim: Leptospirosis is a re-emerging zoonosis that is under-reported in tropical countries, and canines can be a potential reservoir of the disease. The objective of this study was to diagnose Leptospira spp. that is actively infected and re-infected in stray dogs and cats from Bogota, D.C., Colombia. Materials and Methods: A sample of 200 animals, including dogs and cats from the animal protection programs of Bogota, Colombia, were used in this study. Blood was collected from these animals for serum and DNA analysis. Conventional polymerase chain reaction (PCR) was performed using the 16s rRNA primer set, and higher-quality amplification products were sequenced by Sanger. For serodiagnosis, a group of PCR-positive

samples was tested using the microagglutination test (MAT). Results: The overall PCR positivity of stray dogs and cats was 56%, 52.9%, and 65.3% in dogs and cats, respectively. The MAT seropositivity was 77.3%, and only dogs showed titers higher than 1:400. Canicola, Icterohaemorrhagiae, Pomona, Hardjo Prajitno, and Canicola and Hardjo prajitno were the serogroups associated with dogs and cats, respectively. Phylogenetic analysis revealed that the strains belonging to Leptospira interrogans serovars related to isolated samples of American, European, and Asian bats (Myotis myotis), dogs, and bovines of American origin. Conclusion: These results showed that stray dogs and cats were previously exposed to different serovars of Leptospira spp. and re-infected with other serovars that actively participated in the transmission cycle. These findings highlight the importance of actively diagnosing infectious animals to design effective intervention strategies.
LANGUAGE OF ORIGINAL DOCUMENT: English

Md Lasim A., Mohd Ngesom A.M., Nathan S., Abdul Razak F., Abdul Halim M., Mohd-Saleh W., Zainul Abidin K., Mohd-Taib F.S.

Bacterial community profiles within the water samples of leptospirosis outbreak areas

(2024) PeerJ, 12 (4), art. no. e17096

DOI: 10.7717/peerj.17096

ABSTRACT: Background: Leptospirosis is a water-related zoonotic disease. The disease is primarily transmitted from animals to humans through pathogenic Leptospira bacteria in contaminated water and soil. Rivers have a critical role in Leptospira transmissions, while co-infection potentials with other waterborne bacteria might increase the severity and death risk of the disease. Methods: The water samples evaluated in this study were collected from four recreational forest rivers, Sungai Congkak, Sungai Lopo, Hulu Perdik, and Gunung Nuang. The samples were subjected to next-generation sequencing (NGS) for the 16S rRNA and in-depth metagenomic analysis of the bacterial communities. Results: The water samples recorded various bacterial diversity. The samples from the Hulu Perdik and Sungai Lopo downstream sampling sites had a more significant diversity, followed by Sungai Congkak. Conversely, the upstream samples from Gunung Nuang exhibited the lowest bacterial diversity. Proteobacteria, Firmicutes, and Acidobacteria were the dominant phyla detected in downstream areas. Potential pathogenic bacteria belonging to the genera Burkholderiales and Serratia were also identified, raising concerns about co-infection possibilities. Nevertheless, Leptospira pathogenic bacteria were absent from all sites, which is attributable to its limited persistence. The bacteria might also be washed to other locations, contributing to the reduced environmental bacterial load. Conclusion: The present study established the presence of pathogenic bacteria in the river ecosystems assessed. The findings offer valuable insights for designing strategies for preventing pathogenic bacteria environmental contamination and managing leptospirosis co-infections with other human diseases. Furthermore, closely monitoring water sample compositions with diverse approaches, including sentinel programs, wastewater-based epidemiology, and clinical surveillance, enables disease transmission and outbreak early detections. The data also provides valuable information for suitable treatments and long-term strategies for combating infectious diseases.
LANGUAGE OF ORIGINAL DOCUMENT: English

Goorhuis B., de Mast Q., Hovius J.W., van Nood E.

New infectious diseases in Europe: The influence of climate change, globalization and human behavior [Nieuwe infectieziekten in Europa: De invloed van klimaatverandering, globalisering en menselijk gedrag]

(2023) Nederlands Tijdschrift voor Geneeskunde, 167 (23), art. no. D7675

ABSTRACT: Climate change directly and indirectly contributes to the emergence of vector and water borne infections. Other infectious diseases may be introduced to new geographical areas as a result of globalisation and changing human behaviour. Despite the still low absolute risk, the pathogenicity of some of these infections creates a significant challenge for clinicians. Awareness of changing disease epidemiology helps in timely recognition of such infections. Vaccination guidelines for emerging vaccine-preventable diseases, such as tick-borne encephalitis and leptospirosis, may need to be updated.

LANGUAGE OF ORIGINAL DOCUMENT: English

Aymée L., Dantas F.T.D.R., Ezepha C., Motta D., Carvalho-Castro F.A., Di Azevedo M.I.N., Lilenbaum W.

Placental abnormalities associated with Leptospira interrogans infection in naturally infected mares

(2024) Journal of Equine Veterinary Science, 138, art. no. 105099

DOI: 10.1016/j.jevs.2024.105099

ABSTRACT: The reproductive features of equine leptospirosis are often neglected. Equine genital leptospirosis is characterized as a silent chronic syndrome, and besides abortions, leads to placental abnormalities, stillbirths, and birth of weak foals. This study aimed to study the occurrence of placental abnormalities associated with Leptospira interrogans infection in naturally infected mares under field conditions. The studied herd had a high occurrence of placentitis and abortions. Ten pregnant mares, eight with placental abnormalities on ultrasonography and were selected. Serum and cervicovaginal mucus (CVM) samples were collected for serology and PCR, respectively. Positive samples in lipL32-PCR were submitted to the sequencing of the secY gene. In lipL32-PCR of CVM, five out of 10 (50%) mares were positive and all were characterized as Leptospira interrogans. Our results highlight the presence of placental abnormalities in the reproductive subclinical leptospirosis syndrome. We encourage field veterinarians to include leptospirosis testing in their reproductive management.

LANGUAGE OF ORIGINAL DOCUMENT: English

Dyakonova A., Siben A.

Dangerous bacterial infections of farm animals in Russia and the Tyumen region

(2024) BIO Web of Conferences, 108, art. no. 03010

DOI: 10.1051/bioconf/202410803010

ABSTRACT: In the 21st century, there is a clear trend of growth in quantitative and qualitative indicators of Russian animal husbandry. The Tyumen region is distinguished by the sustainable development of the agro-industrial complex. In conditions of intensive development of animal husbandry in Russia and the Tyumen region, it is of particular importance to preserve the health of livestock at enterprises and in private subsidiary farms. The article examines particularly dangerous bacterial infectious diseases of farm animals. Such diseases include anthrax, tuberculosis, brucellosis and leptospirosis. The main epidemic characteristics in dynamics over the past five years, including the incidence of animals and the spread of infections in Russia

and the Tyumen region, have been analyzed, peaks in morbidity and main trends have been identified. Brief characteristics of diseases are presented, the main preventive measures and measures provided for by legislation are analyzed.
LANGUAGE OF ORIGINAL DOCUMENT: English

Sudlovenick E., Simonee J., Jones M.E.B., L'hérault V., Hernández-Ortiz A., Jenkins E., Parker S., Mavrot F., Schneider A., Kutz S., Saliki J.T., Daoust P.-Y.

Surveillance for Zoonotic Pathogens and Inuit Qaujimajatuqangit of Ringed Seals (nattiit) (Pusa hispida) in Frobisher Bay and Eclipse Sound, Nunavut, Canada

(2023) Arctic, 76 (3), pp. 293 - 310
DOI: 10.14430/arctic78294

ABSTRACT: Ringed seals (Pusa hispida) (nattiq (s.), nattiit (pl.) [Inuktut]) provide an important food staple for Nunavummiut (Indigenous residents of Nunavut). We studied the health of nattiit harvested by hunters from Baffin Island, Nunavut, via Inuit Qaujimajatuqangit and veterinary science. We conducted serological surveys and polymerase chain reaction (PCR) for select zoonotic pathogens, including Brucella spp., Erysipelothrix rhusiopathiae, Leptospira interrogans, and Toxoplasma gondii, in 55 nattiit from Frobisher Bay (FB) and 58 nattiit from Eclipse Sound (ES). We used a digestion assay to determine the presence of Trichinella spp. larvae in muscle samples from these seals. We conducted interviews with nine Local Knowledge Holders (LKHs) from Iqaluit (FB) and nine from Pond Inlet (ES) to gather their observations about nattiq health. The hunters evaluated nattiq health through a combination of behavior, nutritional condition, and appearance of skin and organs. They rarely observed severely ill nattiit. Hunters from ES but not from FB observed declining nattiit population numbers. In both regions, they observed increased numbers of harp seals (Phoca groenlandica). Frequencies of natural exposure among nattiit from FB and ES, based on seroprevalence, were 20.5% and 37% for Brucella spp., 25% and 11% for E. rhusiopathiae, 93% and 100% for L. interrogans, and 10% and 27% for T. gondii, respectively; PCR was negative for these pathogens in organs and tissues of seropositive animals. We did not detect larvae of Trichinella spp. Knowledge and experience from the LKHs in assessing nattiq health, complemented by negative findings from direct detection methods, provide reassurance about the safety of nattiit as country food, despite their exposure to some zoonotic pathogens in their natural environment.
LANGUAGE OF ORIGINAL DOCUMENT: English

Lippi I., Perondi F., Ghiselli G., Santini S., Habermaass V., Marchetti V.

Anemia in Dogs with Acute Kidney Injury

(2024) Veterinary Sciences, 11 (5), art. no. 212
DOI: 10.3390/vetsci11050212

ABSTRACT: Anemia is a well-known complication in CKD dogs, but its frequency in AKI dogs has been poorly investigated. The aim of the present study was to retrospectively evaluate frequency, degree of severity, and regeneration rate of anemia in relation to IRIS grade, etiology, therapy, and outcome. Medical records of dogs (2017–2023) with historical, laboratory, and ultrasound findings consistent with AKI were retrospectively reviewed. According to etiology, AKI was classified as ischemic/inflammatory (IS), infectious (INF), nephrotoxic (NEP), obstructive (OBS), and unknown (UK). AKI dogs were also classified according to therapeutical

management (medical vs. hemodialysis), survival to discharge (survivors vs. non-survivors). Anemia was defined as HCT < 37% and classified as mild (HCT 30–37%), moderate (HCT 20–29%), severe (13–19%), or very severe (<13%). Anemia was classified as microcytic (MCV < 61 fL), normocytic (61 and 73 fL), and macrocytic (>73 fL). Anemia was considered hypochromic (MCHC< 32 g/dL), normochromic (32 and 38 g/dL), and hyperchromic (>38 g/dL). Regeneration rate was considered absent (RET ≤ 60,000/µL), mild 61,000–150,000/µL), and moderate (>150,000/µL). A total of 120 AKI dogs were included in the study, and anemia was found in 86/120 dogs (72%). The severity of anemia was mild in 32/86 dogs (37%), moderate in 40/86 dogs (47%), severe in 11/86 dogs (13%), and very severe in 3/86 (3%). Anemia was normochromic in 71/86 dogs (83%), hyperchromic in 12/86 dogs (14%), and hypochromic in 3/86 dogs (3%). Normocytic anemia was present in 56/86 dogs (65%), microcytic anemia in 27/86 dogs (31%), and macrocytic anemia in 3/86 dogs (4%). Non-regenerative anemia was found in 76/86 dogs (88%). The frequency of anemia increased significantly ($p < 0.0001$) with the progression of IRIS grade, although no significant difference in the severity of anemia was found among the IRIS grades. The frequency of non-regenerative forms of anemia was significantly higher than regenerative forms ($p < 0.0001$) in all IRIS grades. In our population of AKI dogs, anemia was a very frequent finding, in agreement with current findings in human nephrology.
LANGUAGE OF ORIGINAL DOCUMENT: English

Asma Idress M., Deepa P.M., Rathish R.L., Vinodkumar K., Pradeep M.

Diagnostic efficacy of urinary neutrophil gelatinase-associated lipocalin and kidney injury molecule-1 for early detection of acute kidney injury in dogs with leptospirosis or babesiosis

(2024) Veterinary Research Communications

DOI: 10.1007/s11259-024-10416-x

ABSTRACT: This study evaluates the diagnostic efficacy of urinary biomarkers, Neutrophil Gelatinase-Associated Lipocalin (uNGAL), and Kidney Injury Molecule-1 (uKIM-1), in identifying Acute Kidney Injury (AKI) in dogs affected with leptospirosis or babesiosis. Acute kidney injury was diagnosed based on the increase in serum creatinine levels above 0.3 mg/dL within 48 h and dogs were categorized according to AKI grades based on International Renal Interest Society guidelines. Traditional biomarkers (serum creatinine and blood urea nitrogen) and novel biomarkers like urinary NGAL and urinary KIM-1 levels were measured and compared to concentrations obtained in control dogs. Statistical analysis assessed significant differences ($P < 0.01$) across AKI grades, specifically noting elevated urinary NGAL and KIM-1 in IRIS grade I AKI ($P < 0.001$). The study highlights the diagnostic significance of urinary NGAL and KIM-1 as early indicators of renal damage, particularly valuable in non-azotemic AKI cases, offering promising markers for early AKI diagnosis in veterinary clinical settings. These biomarkers demonstrate clinical utility and underscore their potential for improving AKI management in veterinary medicine. Further validation studies involving larger cohorts and diverse etiologies of AKI are needed to confirm the diagnostic accuracy and clinical utility of urinary NGAL and KIM-1 in veterinary practice.
LANGUAGE OF ORIGINAL DOCUMENT: English

Rathinam S.R., Kohila J.G., Sundar B.K., Gowri C.P., Vedhanayagi R., Radhika M., Nadella V.

Utility of demographic and clinical signs as diagnostic predictors for leptospiral uveitis: A retrospective study

(2024) Indian Journal of Ophthalmology, 72 (6), pp. 869 - 877
DOI: 10.4103/IJO.IJO_1376_23
ABSTRACT: Purpose: Leptospirosis is a waterborne zoonotic disease prevalent in tropical regions, causing significant morbidity and mortality. It can involve any organ in its primary stage, and uveitis is its late complication. While advanced laboratory diagnosis is available only in tertiary care centers globally, a cost-effective bedside assessment of clinical signs and their scoring could offer a provisional diagnosis. Aim: To analyze the diagnostic potential of demographic and clinical signs in a large cohort of serologically confirmed leptospiral uveitis patients. Methods: In this retrospective study, demographic and clinical parameters of 876 seropositive leptospiral uveitis patients and 1042 nonleptospiral uveitis controls were studied. Multivariable logistic regression analysis with bootstrap confidence interval (CI) characterized the diagnostic predictors. The performance of the model was evaluated using the area under the receiver operating curve (AUROC). Results: Presence of nongranulomatous uveitis (odds ratio [OR] = 6.9), hypopyon (OR = 4.6), vitreous infiltration with membranous opacities (OR = 4.3), bilateral involvement (OR = 4), panuveitis (OR = 3.3), vasculitis (OR = 1.9), disc hyperemia (OR = 1.6), absence of retinochoroiditis (OR = 15), and absence of cystoid macular edema (OR = 8.9) emerged as predictive parameters. The AUROC value was 0.86 with 95% CI of 0.846-0.874. At a cut-off score of 40, the sensitivity and specificity were 79.5 and 78.4, respectively. Conclusion: The study demonstrates that ocular signs can serve as diagnostic predictors for leptospiral uveitis, enabling primary care ophthalmologists to make bedside diagnosis. This can be further confirmed by laboratory methods available at tertiary care centers.
LANGUAGE OF ORIGINAL DOCUMENT: English

Wainaina M., Lindahl J.F., Mayer-Scholl A., Ufermann C.-M., Domelevo Entfellner J.-B., Roesler U., Roesel K., Grace D., Bett B., Al Dahouk S.

Molecular and serological diagnosis of multiple bacterial zoonoses in febrile outpatients in Garissa County, north-eastern Kenya

(2024) Scientific Reports, 14 (1), art. no. 12263
DOI: 10.1038/s41598-024-62714-8
ABSTRACT: Bacterial zoonoses are diseases caused by bacterial pathogens that can be naturally transmitted between humans and vertebrate animals. They are important causes of non-malarial fevers in Kenya, yet their epidemiology remains unclear. We investigated brucellosis, Q-fever and leptospirosis in the venous blood of 216 malaria-negative febrile patients recruited in two health centres (98 from Ijara and 118 from Sangailu health centres) in Garissa County in north-eastern Kenya. We determined exposure to the three zoonoses using serological (Rose Bengal test for Brucella spp., ELISA for C. burnetti and microscopic agglutination test for Leptospira spp.) and real-time PCR testing and identified risk factors for exposure. We also used non-targeted metagenomic sequencing on nine selected patients to assess the presence of other possible bacterial causes of non-malarial fevers. Considerable PCR positivity was found for Brucella (19.4%, 95% confidence intervals [CI] 14.2–25.5) and Leptospira spp. (1.7%, 95% CI 0.4–4.9), and high endpoint titres were observed against leptospiral serovar Grippotyphosa from the serological testing. Patients aged 5–17 years old had 4.02 (95% CI 1.18–13.70, p-value = 0.03) and 2.42 (95% CI 1.09–5.34, p-value = 0.03) times higher odds of infection with Brucella spp. and Coxiella burnetii than those of ages 35–80. Additionally, patients who sourced water from dams/springs, and other sources (protected wells, boreholes, bottled water, and water pans) had

2.39 (95% CI 1.22–4.68, p-value = 0.01) and 2.24 (1.15–4.35, p-value = 0.02) times higher odds of exposure to C. burnetii than those who used unprotected wells. Streptococcus and Moraxella spp. were determined using metagenomic sequencing. Brucellosis, leptospirosis, Streptococcus and Moraxella infections are potentially important causes of non-malarial fevers in Garissa. This knowledge can guide routine diagnosis, thus helping lower the disease burden and ensure better health outcomes, especially in younger populations.
LANGUAGE OF ORIGINAL DOCUMENT: English

Xie X., Chen X., Zhang S., Liu J., Zhang W., Cao Y.

Neutralizing gut-derived lipopolysaccharide as a novel therapeutic strategy for severe leptospirosis

(2024) eLife, 13

DOI: 10.7554/eLife.96065

ABSTRACT: Leptospirosis is an emerging infectious disease caused by pathogenic Leptospira spp. Humans and some mammals can develop severe forms of leptospirosis accompanied by a dysregulated inflammatory response, which often results in death. The gut microbiota has been increasingly recognized as a vital element in systemic health. However, the precise role of the gut microbiota in severe leptospirosis is still unknown. Here, we aimed to explore the function and potential mechanisms of the gut microbiota in a hamster model of severe leptospirosis. Our study showed that leptospires were able to multiply in the intestine, cause pathological injury, and induce intestinal and systemic inflammatory responses. 16S rRNA gene sequencing analysis revealed that Leptospira infection changed the composition of the gut microbiota of hamsters with an expansion of Proteobacteria. In addition, gut barrier permeability was increased after infection, as reflected by a decrease in the expression of tight junctions. Translocated Proteobacteria were found in the intestinal epithelium of moribund hamsters, as determined by fluorescence in situ hybridization, with elevated lipopolysaccharide (LPS) levels in the serum. Moreover, gut microbiota depletion reduced the survival time, increased the leptospiral load, and promoted the expression of proinflammatory cytokines after Leptospira infection. Intriguingly, fecal filtration and serum from moribund hamsters both increased the transcription of TNF-α, IL-1β, IL-10, and TLR4 in macrophages compared with those from uninfected hamsters. These stimulating activities were inhibited by LPS neutralization using polymyxin B. Based on our findings, we identified an LPS neutralization therapy that significantly improved the survival rates in severe leptospirosis when used in combination with antibiotic therapy or polyclonal antibody therapy. In conclusion, our study not only uncovers the role of the gut microbiota in severe leptospirosis but also provides a therapeutic strategy for severe leptospirosis.
LANGUAGE OF ORIGINAL DOCUMENT: English

Ayala-Torres J.R., Hernández-Morales M.F., Alanis-Gallardo V.M., Arvizu-Tovar L.O., Soberanis-Ramos O.

Seroprevalence of leptospirosis in a Mexican military population working with animals

(2024) Public Health Challenges, 3 (2), art. no. e193

DOI: 10.1002/puh2.193

ABSTRACT: Background: Leptospirosis is a zoonotic disease and a challenge to global public health. There is an occupational risk, particularly in populations with direct contact with animals and in high-humidity environments, which favors the survival of leptospires. This study aimed to determine the seroprevalence of leptospirosis in military personnel working in close contact with animals in México and to describe the available

preventive measures and protection levels. Methods: A cross-sectional study was conducted from March to October 2015. Information regarding protective factors in daily activities was gathered through a self-evaluation questionnaire. The serum samples of participants were analyzed through enzyme-linked immunoassay (ELISA) and microscopic agglutination test. Results: Serums were obtained from 65 active military personnel, 56 males (86.2%) and 9 females (13.8%). Out of the total, 54 (83.1%) tested positive for infection by leptospirosis, 49 were males (87.5%) and 5 were females (55.6%). The highest seroprevalence age group was in the ≥45 years group (15, 23.07%), where all tested positive. Regarding military ranks, 100% of the highest hierarchy turned out positive: Officers (4 out of 4) and Chiefs (14 out of 14); and troops resulted in a seroprevalence of 76.5%. Protection equipment available during daily chores included: Overall, 64.6% had gloves and 53.8% had boots; the reported frequency for the use of gloves was 35.3% (46/65) if worn during more than half of the workday, yet 29.2% (19/65) reported never wearing them. Conclusions: This study makes the petition to implement protocols of continuous training regarding labor risks and having an epidemiologic surveillance program for exposed personnel indispensable to improve the health and sanitary conditions of military personnel who work in direct contact with animals.
LANGUAGE OF ORIGINAL DOCUMENT: English

Ramos-Vázquez J.R., Sánchez-Montes S., Esparza-González S.C., Romero-Salas D., Pardio-Sedas V., Estrada-Coates A.T., Alva-Trujillo M., Ballados-González G.G., Grostieta E., Becker I., Cruz-Romero A.
Isolation and molecular identification of Leptospira santarosai and Leptospira interrogans in equines from eastern Mexico
(2024) Acta Tropica, 256, art. no. 107242
DOI: 10.1016/j.actatropica.2024.107242
ABSTRACT: Leptospirosis is an infectious disease with a worldwide distribution, which represents a major challenge in animal production across developing countries, mainly in tropical areas. Horses are particularly susceptible to the disease, presenting manifestations ranging from subclinical to the development of uveitis that compromises the visual health of the animals. In recent years, serological studies have been carried out in equid populations from America, demonstrating high exposure. For this reason, the aim of this study was to demonstrate microbiologically and molecularly the presence of the members of the genus Leptospira in urine samples from equids in an endemic state of leptospirosis in Mexico, and to detect the serological presence of anti-Leptospira antibodies in the sampled animals. For this reason, blood and urine samples were collected from 28 horses and one mule from three localities in the state of Veracruz, Mexico. Urine samples were inoculated in Ellinghausen–McCullough–Johnson–Harris (EMJH) medium, and the recovered isolates were typed using a short Multi Locus Sequence Typing scheme. Amplifications of the expected size were subjected to sequencing, and the recovered sequences were compared with those of reference deposited in GenBank using the BLAST tool. To identify their phylogenetic position, we performed a phylogenetic reconstruction using the maximum likelihood method. Additionally, Microscopic Agglutination test was performed on the serum samples to identify anti-Leptospira antibodies. We recovered 16 urine isolates which tested positive for the presence of Leptospira DNA. The phylogenetic reconstruction and the MLST analysis confirmed the presence of several genotypes of Leptospira interrogans and Leptospira santarosai. An overall serological frequency of 97.1 % was detected. Our results represent the first record of the presence of Leptospira through bacteriological isolates in equids from Mexico. © 2024

LANGUAGE OF ORIGINAL DOCUMENT: English

de Oliveira D., Khalil H., Palma F.A.G., Santana R., Nery N., Quintero-Vélez J.C., Zeppelini C.G., Sacramento G.A.D., Cruz J.S., Lustosa R., Ferreira I.S., Carvalho-Pereira T., Diggle P.J., Wunder E.A., Ko A.I., Lopez Y.A., Begon M., Reis M.G., Costa F.

Factors associated with differential seropositivity to Leptospira interrogans and Leptospira kirschneri in a high transmission urban setting for leptospirosis in Brazil

(2024) PLoS Neglected Tropical Diseases, 18 (5), art. no. e0011292
DOI: 10.1371/journal.pntd.0011292

ABSTRACT: Background Leptospirosis is a zoonosis caused by pathogenic species of bacteria belonging to the genus Leptospira. Most studies infer the epidemiological patterns of a single serogroup or aggregate all serogroups to estimate overall seropositivity, thus not exploring the risks of exposure to distinct serogroups. The present study aims to delineate the demographic, socioeconomic and environmental factors associated with seropositivity of Leptospira serogroup Icterohaemorraghiae and serogroup Cynopteri in an urban high transmission setting for leptospirosis in Brazil. Methods/Principal findings We performed a cross-sectional serological study in five informal urban communities in the city of Salvador, Brazil. During the years 2018, 2020 2021, we recruited 2.808 residents and collected blood samples for serological analysis using microagglutination assays. We used a fixed-effect multinomial logistic regression model to identify risk factors associated with seropositivity for each serogroup. Seropositivity to Cynopteri increased with each year of age (OR 1.03; 95% CI 1.01–1.06) and was higher in those living in houses with unplastered walls (exposed brick) (OR 1.68; 95% CI 1.09–2.59) and where cats were present near the household (OR 2.00; 95% CI 1.03–3.88). Seropositivity to Icterohaemorrhagiae also increased with each year of age (OR 1.02; 95% CI 1.01–1.03) and was higher in males (OR 1.51; 95% CI 1.09–2.10), in those with work-related exposures (OR 1.71; 95% CI 1.10– 2.66) or who had contact with sewage (OR 1.42; 95% CI 1.00–2.03). Spatial analysis showed differences in distribution of seropositivity to serogroups Icterohaemorrhagiae and Cynopteri within the five districts where study communities were situated. Conclusions/Significance Our data suggest distinct epidemiological patterns associated with the Icterohaemorrhagiae and Cynopteri serogroups in the urban environment at high risk for leptospirosis and with differences in spatial niches. We emphasize the need for studies that accurately identify the different pathogenic serogroups that circulate and infect residents of low-income areas.

LANGUAGE OF ORIGINAL DOCUMENT: English

Mishra S.K., Munne K., Jadhav D., Patil S., Maile A., Salvi N., Chauhan S., Kulkarni R.

Laboratory diagnosis and epidemiological features of leptospirosis cases in a tribal region of Western Maharashtra, India: A retrospective study

(2024) Indian Journal of Medical Microbiology, 50, art. no. 100641
DOI: 10.1016/j.ijmmb.2024.100641

ABSTRACT: Purpose: Palghar district, located in the coastal region of the Konkan division of Maharashtra, has a predominantly tribal population. Leptospirosis is a major neglected public health problem and is highly underreported in Palghar district. The study aimed to evaluate the seropositivity of Leptospira infection and its associated epidemiological factors in tribal areas of the Palghar district of Maharashtra. Methods: The present retrospective study included 94 samples of patients clinically suspected of leptospirosis during a period of one

year (2021–2022) tested at Model Rural Health Research Unit (MRHRU) Dahanu. The serum sample testing was done for the presence of specific Leptospira IgM antibodies using the Panbio™ Leptospira IgM ELISA kit. Leptospirosis seropositivity was correlated with various epidemiological risk factors. Results: A total of 12 samples of patients tested positive for specific IgM antibodies by ELISA method, indicating an overall positivity of 12.8%. Among those who tested positive, fever (83.3%), headache (58.3%), myalgia (50%), redness of the eyes (50%), and calf tenderness (16.7%) were the common symptoms observed. Subjects with redness of the eyes were significantly associated with leptospirosis (p = 0.018). The highest positivity (50%) was reported from the Ganjad area of Dahanu taluka. Farmers and animal handlers were most affected by leptospirosis. Conclusion: The high proportion of Leptospirosis cases reflects the endemic nature of the disease in the Palghar district. This study shows seasonal trends in leptospirosis incidence over the year. The clinical presentation of leptospirosis may vary from sub-clinical to mild illness to severe and potentially fatal. The findings of this study will be important for achieving the overarching goal of One Health.
LANGUAGE OF ORIGINAL DOCUMENT: English

Delamare H., Septfons A., Alfandari S., Mailles A.

Freshwater sports and infectious diseases: A narrative review

(2024) Infectious Diseases Now, 54 (4), art. no. 104883

DOI: 10.1016/j.idnow.2024.104883

ABSTRACT: Freshwater sports involve a wide range of practices leading to contact with soil and water that can entail exposure to agents of potential infectious diseases. The pathogens can be multiple (bacteria, parasites, viruses, fungi), and be either well-known or more unfamiliar and exotic. We conducted a literature review to describe various infections contracted following exposure to water and mud during freshwater sport activities. Out of the 1011 articles identified, 50 were finally included. Our findings encompassed bacterial infections (leptospirosis and gastrointestinal infections); parasitic infections (schistosomiasis, cercarial dermatitis); viral infections (norovirus and other gastrointestinal viruses; seaweed contamination; and fungal infections. These infections were reported in various countries worldwide among diverse freshwater sport activities, including swimming, surfing, kayaking, as well as extreme sports such as adventure races and mud runs. Water sports in freshwater can expose participants to infectious risks according to geographical location and type of sport. Because regular sport practice is beneficial for health, freshwater sports should not be avoided due to potential exposure to pathogens; that much said, certain precautions should be taken. In addition to adoption of preventive measures, participants should be informed about infectious risks and seek medical advice if symptoms appear after exposure. Current guidelines for assessment of bathing water quality do not suffice to ensure comprehensive evaluation of freshwater quality. Event organizers are called upon to pay close attention to environmental factors and meteorological events, to conduct timely sensitization campaigns, and to enforce appropriate safety measures.
LANGUAGE OF ORIGINAL DOCUMENT: English

Vyn C.M., Libera K.C., Jardine C.M., Grant L.E.

Canine leptospirosis: A One Health approach for improved surveillance, prevention, and interdisciplinary collaboration

(2024) The Canadian veterinary journal = La revue veterinaire canadienne, 65 (6), pp. 609 - 612

LANGUAGE OF ORIGINAL DOCUMENT: English

Saatchi M., Khankeh H.R., Shojafard J., Barzanji A., Ranjbar M., Nazari N., Mahmodi M.A., Ahmadi S., Farrokhi M.

Communicable diseases outbreaks after natural disasters: A systematic scoping review for incidence, risk factors and recommendations

(2024) Progress in Disaster Science, 23, art. no. 100334

DOI: 10.1016/j.pdisas.2024.100334

ABSTRACT: Background: Natural hazards can play a considerable role in the emergence and spread of infectious diseases (ID). There are various risk factors associated with disease outbreaks following disasters. Objective: This study aimed to conduct a comprehensive systematic analysis of communicable disease epidemic and their associated risk factors following disasters worldwide. Method: This is a systematic review adhering to the PRISMA Scoping Review criteria, encompassing various types of descriptive and analytical research, such as cross-sectional, case-control, cohort, and ecological studies. Published articles to the end of March 2022 were searched on the Web of Science, PubMed, and Scopus. The primary objective of this review was to examine the incidence and/or prevalence of ID following natural disasters. Results: After screening 12,151 titles, 72 articles were included in the final analysis. Increased ID incidence rates and outbreaks after floods, earthquakes, tsunamis, tropical storms, heavy rainfall, hurricanes and tornadoes, extreme heat waves, and drought have been reported. Most commonly, outbreaks of diarrhea were reported after floods, followed by leptospirosis and malaria. After earthquakes, an increased incidence of upper and lower respiratory infections was recorded. Outbreaks of gastrointestinal infections and cutaneous leishmaniasis were noted after earthquakes. Tetanus, measles, and malaria epidemics occurred post-tsunami, while cholera and dengue fever were predominant after cyclonic events and monsoons. Socio-economic status, poor water supply, low sanitation & hygiene, poor food security, sex, age, occupation, and co-existing disease are important risk factors of epidemics after disasters. Conclusion: This review outlines the important ID and major risk factors in the population exposed to natural disasters, providing valuable insights for policymakers and disaster risk managers.

LANGUAGE OF ORIGINAL DOCUMENT: English

Rees E.M., Batista M.L., Kama M., Kucharski A.J., Lau C.L., Lowe R.

Quantifying the relationship between climatic indicators and leptospirosis incidence in Fiji: A modelling study

(2023) PLOS Global Public Health, 3 (10 October), art. no. e0002400

DOI: 10.1371/journal.pgph.0002400

ABSTRACT: Leptospirosis, a global zoonotic disease, is prevalent in tropical and subtropical regions, including Fiji where it's endemic with year-round cases and sporadic outbreaks coinciding with heavy rainfall. However, the relationship between climate and leptospirosis has not yet been well characterised in the South Pacific. In this study, we quantify the effects of different climatic indicators on leptospirosis incidence in Fiji, using a time series of weekly case data between 2006 and 2017. We used a Bayesian hierarchical mixed-model framework to explore the impact of different precipitation, temperature, and El Niño Southern Oscillation (ENSO) indicators on leptospirosis cases over a 12-year period. We found that total precipitation from the previous six

weeks (lagged by one week) was the best precipitation indicator, with increased total precipitation leading to increased leptospirosis incidence (0.24 [95% CrI 0.15–0.33]). Negative values of the Niño 3.4 index (indicative of La Niña conditions) lagged by four weeks were associated with increased leptospirosis risk (-0.2 [95% CrI -0.29 –-0.11]). Finally, minimum temperature (lagged by one week) when included with the other variables was positively associated with leptospirosis risk (0.15 [95% CrI 0.01–0.30]). We found that the final model was better able to capture the outbreak peaks compared with the baseline model (which included seasonal and inter-annual random effects), particularly in the Western and Northern division, with climate indicators improving predictions 58.1% of the time. This study identified key climatic factors influencing leptospirosis risk in Fiji. Combining these results with demographic and spatial factors can support a precision public health framework allowing for more effective public health preparedness and response which targets interventions to the right population, place, and time. This study further highlights the need for enhanced surveillance data and is a necessary first step towards the development of a climate-based early warning system.
LANGUAGE OF ORIGINAL DOCUMENT: English

Kumar K.V., Swathi M., Bokade P.P., Bharath V., SowjanyaKumari S., Sunder J., Hemadri D., Shome B.R., Balamurugan V.

Emerging and changing patterns in prevalence of anti-leptospiral antibodies against different serogroups in livestock in Andaman-Islands ecosystem

(2024) Proceedings of the National Academy of Sciences India Section B - Biological Sciences
DOI: 10.1007/s40011-024-01589-1
ABSTRACT: This study investigated the relative distribution of Leptospira serovars and changing patterns of anti-leptospiral antibodies in the endemic Andaman Islands of India. A total of 490 purposive random serum samples from cattle (n = 386) and goats (n = 104) were collected from December 2019 to January 2020 and were tested in a microscopic agglutination test (MAT) using a panel of 17 reference Leptospira serovars comprising 16 serogroups including two serovars of intermediate Leptospira species. The total overall seroprevalence of 17.6% (86/490) was observed, with 17.6% attributed to cattle and 17.3% to goats. The major reactive serogroup-specific anti-leptospiral antibodies observed were Icterohaemorrhagiae (32.6%), Hardjo (15.1%), Hebdomadis (11.6%), Grippotyphosa (10.5%), Pomona (9.3%), Tarassovi (9.3%), amongst others. This investigation provides evidence for the circulation and emergence of pathogenic Tarassovi and Djasiman serovars and intermediate Hurstbridge serovar in the livestock of South Andaman. This study's findings would help further strengthen the one-health strategy and mitigate the leptospirosis burden in the Andaman Islands ecosystem of India.
LANGUAGE OF ORIGINAL DOCUMENT: English

Shi Y., Geng M., Zhou S., Chen X., Sun J., Tian X., Xu H., Li Y., Zheng C.

Epidemiological characteristics of leptospirosis in China from 2010 to 2022

(2024) Zhongguo xue xi chong bing fang zhi za zhi = Chinese journal of schistosomiasis control, 36 (2), pp. 130 - 136

DOI: 10.16250/j.32.1374.2024033

ABSTRACT: OBJECTIVE: To analyze the epidemiological characteristics of leptospirosis in China from 2010 to 2022, so as to provide insights into formulation of the leptospirosis control strategy. METHODS: All data pertaining to clinically diagnosed cases and confirmed cases of leptospirosis reported in China from January 1, 2010 to December 31, 2022 was collected from Chinese Disease Prevention and Control Information Management System. The spatial, temporal and population distributions, and report and diagnosis institutions of leptospirosis cases were analyzed using a descriptive epidemiological method. RESULTS: A total of 4 559 leptospirosis cases were reported in China from 2010 to 2022, with an annual average number of 351 cases, and the number of reported leptospirosis cases reduced from 679 cases in 2010 to 158 cases in 2018. A total of 4 276 leptospirosis cases were reported in Sichuan Province, Yunnan Province, Guangdong Province, Hunan Province, Fujian Province, Zhejiang Province, Guangxi Zhuang Autonomous Region, Anhui Province, Jiangxi Province and Guizhou Province, accounting for 93.79% of the total number of leptospirosis cases in China. The number of leptospirosis cases had recently appeared a remarkable decline in Yunnan Province, while a significant rise was seen in the number of leptospirosis cases in two provinces of Zhejiang and Guangdong. No leptospirosis cases were reported in Henan Province from 2010 to 2020; however, there were 5 cases and 2 cases reported in 2021 and 2022, respectively. There was only one leptospirosis case reported in Shaanxi Province from 2010 to 2017; however, leptospirosis cases were reported in the province for 5 consecutive years since 2018. Leptospirosis cases were reported throughout the year in China from 2010 to 2022, with the peak of incidence found during the period between August and October, and the peak of leptospirosis incidence varied in provinces. A higher number of leptospirosis cases was seen among men than among women, with a male to female ratio of 2.3:1, and the median age of leptospirosis cases was 50 years (interquartile range, 23 years), with the highest proportion of leptospirosis cases reported at ages of 51 to 60 years (23.21%). Among all reported leptospirosis cases, 53.28% were confirmed cases, and the proportion of confirmed cases increased from 35.05% in 2010 to 61.66% in 2022. In addition, there were 67.22% of leptospirosis cases (2 937 cases) reported by comprehensive hospitals, 20.44% (893 cases) by disease control and prevention institutions, 7.23% (316 cases) by grassroots healthcare institutions and 5.10% (223 cases) by other healthcare and medical institutions, and the mortality of reported leptospirosis cases was 1.07% in China from 2010 to 2022, with a higher mortality seen among men than among women (1.39% vs. 0.36%; $\chi 2 = 9.52$, $P = 0.002$). CONCLUSIONS: The incidence of leptospirosis remained at a low level in China from 2010 to 2022, and southern China was still the main endemic area for leptospirosis. The epidemiological characteristics of leptospirosis cases varied in endemic provinces, and leptospirosis cases had been continued to be reported in Shaanxi and Henan provinces, which should be paid much attention to. Intensified surveillance of leptospirosis, improved diagnosis and treatment capability of leptospirosis cases and leptospirosis control with adaptations to local circumstance are recommended.

LANGUAGE OF ORIGINAL DOCUMENT: Chinese

Pinto G.V., Senthilkumar K., Rai P., Kabekkodu S.P., Karunasagar I., Kumar B.K.

Identification of Dominant Leptospira Serogroups among Leptospirosis Cases and Their Clinical Outcomes: A Prospective Hospital-Based Study in Mangaluru, India

(2024) American Journal of Tropical Medicine and Hygiene, 110 (6), pp. 1230 - 1236

DOI: 10.4269/ajtmh.23-0416

ABSTRACT: Leptospirosis is a reemerging zoonotic disease of worldwide significance, endemic to the southern region of India, with clinical manifestations similar to other febrile illnesses; hence, it is often misdiagnosed and underreported. Inadequate information about the disease burden and the regional circulating serogroups contributes to its neglected disease status. This study aimed to identify the infecting Leptospira serogroup in the coastal region of Mangaluru and study the clinical symptoms and outcome among leptospirosis patients. Serum samples were collected from 30 patients with confirmed leptospirosis admitted to a tertiary care center in Mangaluru and screened by microscopic agglutination test (MAT) for the infecting serogroup. The clinical profile of these cases was reviewed, and data regarding epidemiological factors such as age, sex, complications, and mortality were recorded. The MAT identified a higher occurrence of serogroup Bataviae (n 5 7, 43.75%) and serogroup Australis (n 5 5, 31.25%) compared with other serogroups screened in this study population. Patients were aged 16 to 65 years, with a predominance of males. The clinical presentation of leptospirosis ranged from a mild febrile illness to multiorgan failure. Fever (n 5 29, 96%) was the common clinical presentation, followed by myalgia, nausea, and abdominal pain. Acute kidney injury, acute respiratory distress syndrome, and multiple organ dysfunction syndrome were the common complications observed. Determining the circulating serogroup is necessary to understand the epidemiology and diversity of Leptospira serogroups among animals and humans to strategize appropriate preventive measures.
LANGUAGE OF ORIGINAL DOCUMENT: English

Rocha S.M.C.D., Pires R.C., Monteiro D.C.S., Cronemberges T.C.R., Souza N.V., Colares J.K.B., Lima D.M.
Is there an overestimation of dengue compared with that of other acute febrile syndromes in childhood?
(2024) PLoS neglected tropical diseases, 18 (6), pp. e0012137
DOI: 10.1371/journal.pntd.0012137
ABSTRACT: A group of children with clinical suspicion of dengue were assessed to determine if there was an overestimation of dengue compared with that of leptospirosis and leishmaniasis. This descriptive and analytical cross-sectional study, based on the active search of participants with acute febrile illness, was conducted at two pediatric hospitals. The collection of clinical and epidemiological data was performed using questionnaires, and laboratory tests specific for dengue were performed using immunochromatographic, serological, and molecular methods. Dengue-negative samples were assessed for Leptospira and Leishmania spp. using molecular tests. Data were assessed using analysis of variance (ANOVA), the chi-square test, and Fisher's exact test. In total, 86 participants were evaluated, of whom 39 (45%) were positive for dengue fever, 4 (5%) for leptospirosis, and 1 (1%) for leishmaniasis. Forty-two participants (49%) presented dengue-like symptoms. The predominant age range for the virus was 3-10 years. Most clinical manifestations were nonspecific, with frequent concomitant gastrointestinal and respiratory symptoms. Furthermore, we found that the acute febrile syndrome in childhood persists as a challenge for health professionals, especially in the early days of the disease, due to a plurality of diagnostic hypotheses, associated with the difficulty of establishing well-defined symptoms in children, especially in infants. Dengue fever continues to be a frequent pathology with acute febrile infections in childhood; however, there is an overestimation of the disease, especially in endemic regions, when one considers only the clinical epidemiological diagnosis.
LANGUAGE OF ORIGINAL DOCUMENT: English

Gutiérrez J.D., Tapias-Rivera J.

Pooled lagged effect of runoff on leptospirosis cases in Colombia

(2024) Heliyon, 10 (12), art. no. e32882

DOI: 10.1016/j.heliyon.2024.e32882

ABSTRACT: Leptospirosis is a global zoonotic disease caused by spirochete bacteria of the genus Leptospira. The disease exhibits a notable incidence in tropical and developing countries, and in Colombia, environmental, economic, social, and cultural conditions favor disease transmission, directly impacting both mortality and morbidity rates. Our objective was to establish the pooled lagged effect of runoff on leptospirosis cases in Colombia. For our study, we included the top 20 Colombian municipalities with the highest number of leptospirosis cases. Monthly cases of leptospirosis, confirmed by laboratory tests and spanning from 2007 to 2022, were obtained from the National Public Health Surveillance System. Additionally, we collected monthly runoff and atmospheric and oceanic data from remote sensors. Multidimensional poverty index values for each municipality were sourced from the Terridata repository. We employed causal inference and distributed lag nonlinear models to estimate the lagged effect of runoff on leptospirosis cases. Municipality-specific estimates were combined through meta-analysis to derive a single estimate for all municipalities under study. The pooled results for the 20 municipalities suggest a lagged effect for the 0 to 2, and 0–3 months of runoff on leptospirosis when the runoff is < 120 g/m2. No effect was identified for longer lagged periods (0–1, 0 to 4, 0 to 5, and 0–6 months) or higher runoff values. Incorporation of the multidimensional poverty index into the meta-analysis of runoff contributed to the models for the lagged periods of 0–3, and 0–4 months.

LANGUAGE OF ORIGINAL DOCUMENT: English

Elhence A., Shalimar

Liver and Tropical Infections

(2024) Current Hepatology Reports

DOI: 10.1007/s11901-024-00648-5

ABSTRACT: Purpose of Review: Tropical infections may present with primary hepatobiliary manifestations mimicking other liver diseases. Gastroenterologists and hepatologists practicing in endemic regions must be aware of appropriate diagnostic testing and treatment of these infections. Recent Findings: Tropical infections like dengue, malaria, scrub typhus, and leptospirosis can mimic viral hepatitis, but certain subtle clues like ongoing fever after the onset of jaundice, hepatomegaly in the setting of acute liver failure-like presentation, preserved coagulation parameters, and multi-system involvement help in suspecting the diagnosis. Infections like localized hepatic tuberculosis, amebic liver abscess, and hydatid disease should be included in the differentials of space-occupying lesions in the liver parenchyma. Hepatosplenic schistosomiasis may mimic other causes of portal hypertension. Summary: A high index of suspicion is required to include tropical infections in the differential diagnoses of patients with liver diseases. They are more likely to occur in individuals residing in the tropics, or with a travel history to these regions.

LANGUAGE OF ORIGINAL DOCUMENT: English

Prager K.C., Danil K., Wurster E., Colegrove K.M., Galloway R., Kettler N., Mani R., McDonough R.F., Sahl J.W., Stone N.E., Wagner D.M., Lloyd-Smith J.O.

Detection of Leptospira kirschneri in a short-beaked common dolphin (Delphinus delphis delphis) stranded off the coast of southern California, USA

(2024) BMC Veterinary Research, 20 (1), art. no. 266

DOI: 10.1186/s12917-024-04111-x

ABSTRACT: Background: Pathogenic Leptospira species are globally important zoonotic pathogens capable of infecting a wide range of host species. In marine mammals, reports of Leptospira have predominantly been in pinnipeds, with isolated reports of infections in cetaceans. Case presentation: On 28 June 2021, a 150.5 cm long female, short-beaked common dolphin (Delphinus delphis delphis) stranded alive on the coast of southern California and subsequently died. Gross necropsy revealed multifocal cortical pallor within the reniculi of the kidney, and lymphoplasmacytic tubulointerstitial nephritis was observed histologically. Immunohistochemistry confirmed Leptospira infection, and PCR followed by lfb1 gene amplicon sequencing suggested that the infecting organism was L.kirschneri. Leptospira DNA capture and enrichment allowed for whole-genome sequencing to be conducted. Phylogenetic analyses confirmed the causative agent was a previously undescribed, divergent lineage of L.kirschneri. Conclusions: We report the first detection of pathogenic Leptospira in a short-beaked common dolphin, and the first detection in any cetacean in the northeastern Pacific Ocean. Renal lesions were consistent with leptospirosis in other host species, including marine mammals, and were the most significant lesions detected overall, suggesting leptospirosis as the likely cause of death. We identified the cause of the infection as L.kirschneri, a species detected only once before in a marine mammal – a northern elephant seal (Mirounga angustirostris) of the northeastern Pacific. These findings raise questions about the mechanism of transmission, given the obligate marine lifestyle of cetaceans (in contrast to pinnipeds, which spend time on land) and the commonly accepted view that Leptospira are quickly killed by salt water. They also raise important questions regarding the source of infection, and whether it arose from transmission among marine mammals or from terrestrial-to-marine spillover. Moving forward, surveillance and sampling must be expanded to better understand the extent to which Leptospira infections occur in the marine ecosystem and possible epidemiological linkages between and among marine and terrestrial host species. Generating Leptospira genomes from different host species will yield crucial information about possible transmission links, and our study highlights the power of new techniques such as DNA enrichment to illuminate the complex ecology of this important zoonotic pathogen.

LANGUAGE OF ORIGINAL DOCUMENT: English

Ricardo T., Bazán Domínguez L.R., Beltramini L., Prieto Y., Montiel A., Margenet L., Schmeling M.F., Chiani Y.T., Signorini M.L., Previtali M.A.

Seroprevalence of Leptospira antibodies in dogs and cats from Santa Fe, a city in East-Central Argentina endemic for leptospirosis

(2024) Preventive Veterinary Medicine, 229, art. no. 106239

DOI: 10.1016/j.prevetmed.2024.106239

ABSTRACT: This study examines household pets as potential epidemiological links between environments contaminated with pathogenic leptospires and humans in Santa Fe, Argentina. The aims of our study were: (a) to characterize the habits and exposure to environmental sources of leptospirosis in the population of dogs

and cats attending to municipal spay and neutering campaigns in Santa Fe, Argentina, (b) to assess the seroprevalence of anti-Leptospira antibodies in asymptomatic dogs and cats, (c) to evaluate factors that could increase seropositivity, and (d) to identify spatial clusters of seropositive dogs and cats in the capital city of Santa Fe. From May to November 2022, a cross-sectional serosurvey was conducted during municipal spaying/neutering campaigns. Eligible household dogs and cats were over 6 months old, apparently healthy, and not vaccinated against leptospirosis in the past 6 months. We used microagglutination test (MAT) to assess anti-Leptospira antibodies using a panel of 10 reference strains. We used generalized linear mixed effects models (GLMM) to examine individual and census tract-level risk factors for seropositivity, and local Moran's I statistic for spatial clusters. Results showed higher leptospiral antibody prevalence in dogs (18.2 %) than cats (3.6 %, p = 0.002). Dogs with street access had higher likelihood of being seropositive (OR: 3.8, 95 % CI: 1.2; 11.9), and areas with chronic poverty showed an elevated risk of presenting seropositive animals (RR: 4.0, 95 % CI: 1.1; 14.4). Spatial analysis didn't reveal significant seropositivity clusters among census tracts. These findings shed light on widespread Leptospira seropositivity in pets in this endemic region. Understanding seroprevalence and risk factors can guide public and veterinary health strategies, emphasizing increased leptospirosis vaccination for dogs in vulnerable areas and promoting responsible pet care.
LANGUAGE OF ORIGINAL DOCUMENT: English

Silva A.F.D., Figueiredo K., Falcão I.W.S., Costa F.A.R., da Rocha Seruffo M.C., de Moraes C.C.G.
Study of machine learning techniques for outcome assessment of leptospirosis patients
(2024) Scientific Reports, 14 (1), art. no. 13929
DOI: 10.1038/s41598-024-62254-1
ABSTRACT: Leptospirosis is a global disease that impacts people worldwide, particularly in humid and tropical regions, and is associated with significant socio-economic deficiencies. Its symptoms are often confused with other syndromes, which can compromise clinical diagnosis and the failure to carry out specific laboratory tests. In this respect, this paper presents a study of three algorithms (Decision Tree, Random Forest and Adaboost) for predicting the outcome (cure or death) of individuals with leptospirosis. Using the records contained in the government National System of Aggressions and Notification (SINAN, in portuguese) from 2007 to 2017, for the state of Pará, Brazil, where the temporal attributes of health care, symptoms (headache, vomiting, jaundice, calf pain) and clinical evolution (renal failure and respiratory changes) were used. In the performance evaluation of the selected models, it was observed that the Random Forest exhibited an accuracy of 90.81% for the training dataset, considering the attributes of experiment 8, and the Decision Tree presented an accuracy of 74.29 for the validation database. So, this result considers the best attributes pointed out by experiment 10: time first symptoms medical attention, time first symptoms ELISA sample collection, medical attention hospital admission time, headache, calf pain, vomiting, jaundice, renal insufficiency, and respiratory alterations. The contribution of this article is the confirmation that artificial intelligence, using the Decision Tree model algorithm, depicting the best choice as the final model to be used in future data for the prediction of human leptospirosis cases, helping in the diagnosis and course of the disease, aiming to avoid the evolution to death.
LANGUAGE OF ORIGINAL DOCUMENT: English

Carvalho H.G.A.C., Silva D.M., Rodrigues G.R.D., Gameiro A.H., dos Santos R.F., Raineri C., Lima A.M.C.

Estimation of economic losses due to leptospirosis in dairy cattle

(2024) Preventive Veterinary Medicine, 229, art. no. 106255

DOI: 10.1016/j.prevetmed.2024.106255

ABSTRACT: There are few studies that effectively quantify the economic losses resulting from problems caused by leptospirosis in naturally infected dairy cattle. Given this gap, the objective of this study was to propose and apply a method to quantify the economic losses resulting from productive and reproductive problems in a commercial dairy herd naturally infected by Leptospira spp. For this study, the zootechnical and economic indicators at a property with Jersey cattle were analyzed during the period from 2014 to 2017. The leptospirosis outbreak occurred in 2014, and the therapeutic approach was carried out between 2015 and 2017, with the latter considered the year of control of the outbreak. The adopted integrated control strategy consisted of dividing the herd according to the serological results obtained through the microscopic agglutination test, the treatment of reagents with streptomycin, and vaccination against leptospirosis of non-reagent heifers and cows. The method used to evaluate the economic indicators of the property was the calculation of the gross margin by taking into account the implicit and explicit cost parameters associated with the manifestation of leptospirosis. The prevalence rate of leptospirosis decreased from 49.4 % in 2015 to 21.6 % in 2017. There was a reduction in the abortion rate (from 40.00 % in 2014 to 9.00 % in 2017), in the stillborn rate (from 2.63 % in 2014 to 1.69 % in 2017) and an increase in the calving rate (from 65.00 % in 2014 to 86.00 % in 2017). In addition, there were increases in the number of lactating cows (from 38 in 2014–57 in 2017) and the mean times of lactation duration, which increased from 275 days in 2014–295 days in 2017. As a result, the average annual production of milk increased from 164,655 liters in 2014–248,521 liters in 2017. In 2014, when treatment hadn't yet started, the gross margin per liter of milk sold, considering implicit and explicit costs, was US$0.00. In 2015 and 2016, US$0.27 and US$0.30 were obtained, respectively, for this variable. In 2017, with the disease under control on the property, the gross margin per liter of milk reached US$0.36. The gross margin per liter of milk sold was higher in the period when the disease was controlled, showing losses of up to 84 % of the gross margin during the outbreak. Immediate treatment of positive cows and preventive measures had a significant impact on improving the productive and economic efficiency of the property.

LANGUAGE OF ORIGINAL DOCUMENT: English

Wells T., Kiupel M., Mani R., Nofs S.A., Thompson K.A., Eustace R.

Three cases of clinical leptospirosis in patagonian maras (Dolichotis patagonum)

(2024) Journal of Zoo and Wildlife Medicine, 55 (2), pp. 502 - 510

DOI: 10.1638/2023-0042

ABSTRACT: Rodents are typically viewed as asymptomatic reservoirs for leptospirosis infection, as clinical disease in rodents is rarely described. This report includes three separate cases of leptospirosis in Patagonian maras (Dolichotis patagonum) over a 3-yr period in multiple locations within a single zoo. All three cases presented with varying clinical signs including lethargy, conjunctival hyperemia, hyperbilirubinemia, and presumed renal azotemia. Infection with Leptospira spp. was diagnosed antemortem by PCR on whole blood (n ¼ 1, Case 1) or urine (n ¼ 2, Cases 2 and 3). Leptospira antibody titers measured by serum microagglutination testing (n ¼ 3) were elevated or increased in all three animals over a 1–3-wk period for

Leptospira serovars Bratislava and Hardjo (Case 1) and Grippotyphosa (Case 2 and 3). Two of the three animals responded to treatment with penicillin and doxycycline and supportive care, whereas one animal did not respond to treatment. Postmortem findings in this individual included conjunctivitis, chemosis, dehydration, icterus, tricavitary serosanguinous effusions, necrotizing hepatitis, diffuse pulmonary congestion, and edema. Immunohistochemical examination identified scattered Leptospira organisms within hepatocytes and renal tubular epithelial cells. A wild raccoon (Procyon lotor) at the institution tested positive by PCR on kidney tissue for the same Leptospira spp. serovar and was the suspected source of infection. This case series highlights the clinical importance of leptospirosis as a differential for Patagonian maras presenting with lethargy, ocular signs, acute hepatic disease, and azotemia.
LANGUAGE OF ORIGINAL DOCUMENT: English

Latif H.M., Essah E.

Key housing conditions that diminish healthy homes among aboriginal communities in Royal Belum Park Malaysia

(2024) Planning Malaysia, 22 (2), pp. 293 - 306
DOI: 10.21837/pm.v22i31.1471

ABSTRACT: Research on healthy homes has been carried out relatively little in Malaysia. The aim of this paper is to establish the relationship between key architectural elements of Aboriginal homes in Sungai Kejar, the Royal Belum State Park, and their potential health risks. The data were drawn through naturalistic observation, unstructured interviews and semi-structured interviews. Despite their green features, many Aboriginal homes lack water-tight measures, sanitation facilities and proper flooring - making the people more susceptible to diseases like Leptospirosis and Malaria. Due to their nomadic lifestyle, the people construct temporary homes using green materials like bamboo and leaves. The government-provided wooden and brick houses did not meet most of their preferences primarily due to their lifestyle, culture and belief system. These underlying issues necessitate a thorough evaluation and research to propose optimal construction methods that meet the bare minimum criteria for healthy homes while also accommodating their lifestyle and preserving cultural heritage. This could include introducing brick flooring, portable rainwater harvesting for clean water supply and healthy homes awareness campaigns.
LANGUAGE OF ORIGINAL DOCUMENT: English