

ID: 1126

Área: Eixo 10 | Outras infecções causadas por vírus

Categoria: NÃO desejo concorrer ao Prêmio Jovem Pesquisador

Região onde foi realizada a pesquisa:

Código: 0721

Data:

Horário: às

Sala:

Forma de Apresentação: E-pôster

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Instituições:

Título: Epidemiological analysis of severe cases of human exposure to Rabies in Caruaru, Pernambuco, Brazil

Introdução: With the highest mortality rate among infectious diseases in the world Rabies is responsible for at least 59,000 human deaths per year, with its majority occurring in undeveloped countries. Dog bites are the main cause of Rabies transmission to humans in the urban areas, and its prevention is readily achieved by animal vaccination campaigns.

Objetivo(s): This study aims to analyze data from cases reported as severe exposure of humans to rabies.

Material e Métodos: Epidemiological data from human exposure cases received by the local health authority was obtained from the Health Department of Caruaru and analyzed by relative frequency distribution.

Resultados e Conclusão: Our study shows that among accidents reported involving animal aggression and classified as severe in the year of 2021 in the city of Caruaru, Pernambuco, the majority were caused by dogs (65.9%), and followed by cats (33.4%), with 91.2% of reported aggressions happening in the urban area. Concerning the type of lesion and the site of the wound, the data showed multiple (49%) and single lesions (45.4%) numerically close and not related to the type of animal involved. The wound site data showed that above 80% of the registered cases did not involve the extremities or mucosa, where the lesions are considered more severe due to the increased risk of virus migration to the central nervous system. However, among the cases involving extremities of the body (head and hands) or mucosa, the hands had the higher number of reported cases (46.6%), probably due to the self-defense attitude. Taken together the evaluation of epidemiological data showed that, the high number (1,356) of total reported severe cases of human exposure to Rabies, mainly involved dogs (65.9%) in the urban area (91.2%), and taking into consideration that no cases of human or animal Rabies was reported in the year of 2021 for the city of Caruaru, it is possible to demonstrate the importance of animal mass vaccinations as a means of Rabies prophylaxis in the urban area worldwide, and the necessity to continue to apply and improve policies for prevention of this fatal disease in Brazil.

Palavras-chave: Virus, disease control, Rabies, mass vaccination, One Health

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Categoria: NÃO desejo concorrer ao Prêmio Jovem Pesquisador

Região onde foi realizada a pesquisa:

Código: 0706

Data:

Horário: às

Sala:

Forma de Apresentação: E-pôster

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Instituições:

Título: Epidemiological study of rabies in dogs and cats from Pernambuco, Brazil

Introdução: Rabies is a lethal zoonosis that affects mammals and impacts public health worldwide.

Objetivo(s): This work aimed to conduct an epidemiological study of Rabies in the state of Pernambuco from 2017 to 2021, and to establish a health education program at the Veterinary Hospital (HOVET) of the Federal Rural University of Pernambuco (UFRPE).

Material e Métodos: Using data provided by the State Department of Health we were able to analyze the impact of Rabies in the State of Pernambuco, and in addition, a health education program was implemented at the Veterinary Hospital of UFRPE to guide and evaluate the perception of guardians about the disease, using questionnaire after the ethical committee authorization.

Resultados e Conclusão: Data from 2017 to 2021 show the occurrence of Rabies in several mammalian species. Between 2017 and 2021, there were 9 reports, with 6 dogs and 3 cats in Pernambuco, among these 1 positive cat in the capital city of Recife in 2017, the same case that generated a positive human rabies case. In 2021 was observed the highest rate with 2 positive cats and 3 positive dogs in Pernambuco, probably due to a lower vaccination range during the pandemics. The survey conducted at HOVET, 32 questionnaires were applied with guardians where 100% (32/32) knew about the disease and considered it important to protect their animals against infectious diseases. Most of the interviewees had more than 2 animals that were rescued from the streets. From the answers we highlight that among the interviewees 78.12% (25/32) had a vaccination protocol, where 53.12% (17/32) vaccinated for rabies and 34.37% (11/32) vaccinated both for rabies and other virus diseases, and 12.5% (4/32) did not receive any type of vaccine. Regarding where the vaccines were taken, more than half of the animals, 56.45% (18/32), received it in Veterinary Clinics, and the rest from other locations. Approximately 81.25% (26/32) had the annual booster and 59.37% (19/32) had it from the Rabies Campaign offered by the municipalities. The results demonstrate the importance of continued health education with the community to ratify the importance of prevention against rabies through animal vaccination.

Palavras-chave: One Health; Pets; Animal Rabies; Epidemiological Surveillance

as they shed the virus continuously. The high prevalence of seropositive animals in herds with PI cattle is easily characterized by ELISA for the detection of antibodies in serum or milk. Bulk-tank milk samples are representative of the immune status of the herd to BVDV and are widely used in control and eradication programs. This sampling technique in dairy herds is non-invasive, inexpensive and easy to use. Diagnosis of BVDV in herds and analysis of production data generate important epidemiological information towards a better understanding of the infection and its economic effects. The objective of the present cross-sectional study was to estimate the dairy herd-level prevalence of BVDV in the Vale do Taquari region of the State of Rio Grande do Sul, Brazil, and to correlate BVDV status with production data of these herds. The target population was constituted by 1,656 herds, with a mean 9.86 (± 7.91) lactating cows and a production of 15.89 liters/cow/day. The farms have a mean area of 20 ha and are run by families of the region. Revenues obtained by milk production are complemented by agriculture and rearing of chicken or swine. In this study, a simple random sampling from the target population was taken to estimate herd-level prevalence with 95% confidence level, expected prevalence of 60% and 5% absolute precision. A total of 300 bulk-milk tanks were sampled in May 2009. All samples were tested for the presence of BVDV specific antibodies using a commercial indirect ELISA, which has an apparent sensitivity of 100% and specificity of 99.5%. Out of 300 samples, 80 were positive (26.7%, 95% confidence interval between 21.7%, and 31.7%); true herd-level prevalence of BVDV was 25.7%. Increasing odds for seropositivity according to number of animals were observed ($p=0.018$). The results demonstrated a low level of exposure to BVDV in the herds of the studied population. We conclude that herd-level BVDV prevalence in this study was low and can be explained by the low size of the herds in the Vale do Taquari region of the State of Rio Grande do Sul, Brazil.

Financial support: CAPES, CNPq and FAPERGS.

152 - MOLECULAR AND PATHOLOGIC CHARACTERIZATION OF TURKEY CORONAVIRUS IN BRAZIL

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The Brazilian poultry industry represents third world producer of turkeys, in 2007 year, whereas the sector is in growth and has a large economic importance moving around 10 million of dollars per year. Brazilian's industry

obtained new markets, showing new perspectives into the international trade. *Turkey Coronavirus* (TCoV) is an agent that causes high transmissible enteritis, causing great economic lost, in Brazil and worldwide. It is an enveloped virus, with single strand RNA, non segmented, positive sense, belongs to *Nidovirales* order, *Coronaviridae* family and *Coronavirus* group III. The present work evaluated the apoptosis process and the molecular variety in turkey embryo tissues experimentally infected by turkey *Coronavirus* (first isolated in Brazil, 2006). The experimental infection was performed through viral inoculation into amniotic cavity in embryonated turkey eggs with 23-25 days of incubation for nine times consecutively. Immunohistochemistry was performed to detect the apoptotic factors Annexin V, Caspase 2, Caspase 3, p53 and apoptosis detection by TUNEL kit. The sequencing of original virus and the respective passages developed to detect mutations acquired through passages. TCoV propagated in turkey eggs (*Melleagridis gallopavo*) presenting enterocytes vacuolization and hemorrhage as histopathologic lesions. Analysis of macroscopic lesions showed mild congestion, liquid accumulation and inflammation process. The apoptosis identification performed applying the commercial kit TUNEL shown the viral presence in intestinal tissue, as well, the cellular apoptosis occurrence. The results demonstrated positive signals to annexin V, caspase 2, caspase 3 and did not shown any signal to p53, exactly how described in others authors. Regarding to the sequences, it was detected the occurrence of three mutations never described before and 19 mutation of common occurrence in TCoV. Finally, the present investigation is of extreme importance to scientific society, because its discoveries can open spaces to future assays contributing to a better known of *coronavirus* pathogenicity.

Financial support: FAPESP

153 - EPI TOPE MAPPING OF THE RABIES VACCINE TROUGH THE ENZYME-LINKED IMMUNOSPOT (ELISPOT) EX VIVO ASSAY IN RECIFE

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Rabies is an antropozoonose presented as acute, progressive and incurable encephalitis, leading to death almost 100% of cases. The rabies virus (RV) is a member of the genus *Lyssavirus* and *Rhabdoviridae* family. This virus has helical nucleocapsid containing single-stranded, negative-sense RNA genome of approximately 12 kb.

The most important and best-studied protein is the envelope glycoprotein (G). According to the World Health Organization (WHO), the distribution of rabies is worldwide, with approximately 35.000 to 40.000 deaths per year, almost all in developing countries. The RV is usually transmitted by a bite from an infected animal. The vaccine currently used is produced in Vero cell culture and present several side effects. Aiming to contribute to the development of a potentially safer vaccine against rabies, our group is investigating immunogenic T-cell epitopes that could be used for a DNA vaccine formulation. The immunogenicity of these proteins, and specifically which epitopes from them are able to induce an effective cellular response, is the main goal of this work. A rabies cohort with 98 patients previously immunized with the rabies vaccine, aging from 16 to 64 years old, with 46 (46,9%) males and 53 (52,1%) females, was established in the Fiocruz (Recife, PE). The Enzyme-Linked Immunospot (ELISPOT) assay is being used to identify T-cell epitopes that are immunogenic from a 120-peptide library synthesized, of 15-mer peptides each overlapping by 11 amino acids (Schafer-Denmark) covering the entire 524 amino acids of the rabies G protein. The peptides were pooled in 22 pools and incubated with Peripheral Blood Mononuclear Cells (PBMCs) from human volunteers. A matrix (11x11) of peptide pools was design to ensure that each peptide must be present in two different pools, thus allowing the deduction of the specific immunogenic peptide. Currently, we have assayed 35 volunteers and 19 peptides were considered reactive. The most and the less immunogenic peptides were recognized for 45,7% and 25,7% of the volunteers, respectively. The top most frequently recognized peptides were select to be studied individually. These results show that some peptides are more important than others to elicit a positive immune T-cell response, and could be used as target to produce more reliable vaccines. Further studies are being carried out as we incorporate more volunteers in our study.

Financial support: NHI-USA, Capes, CNPq

154 - LONG-LASTING STABILITY OF VACCINIA VIRUS STRAINS IN MURINE FECES: IMPLICATIONS FOR VIRUS CIRCULATION AND ENVIRONMENTAL MAINTENANCE

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Vaccinia virus (VACV) has been associated with several bovine vaccinia outbreaks in Brazil, causing exanthematic lesions in dairy cattle and humans. The VACV environ-

mental circulation is unknown, as well as the way that this virus accesses the farms from the wild-life. Rodents are hypothetical VACV reservoirs and murine feces have been associated as a potential source of viral shedding and transmission. This work analyzed the stability of VACV infectious particles and DNA in intranasally infected mice feces exposed to environmental temperature and humidity, by titration assays and PCR respectively. The results showed that VACV infectious particles were still detected at 20 days-post-environmental-exposure (d.p.e.), while viral DNA was detected until 60 d.p.e.. A gradual decrease in fecal viral load could be monitored in all analyzed VACV strains. This work indicated VACV long-lasting stability in murine feces and reinforce that fecal matter may represent a potential source for circulating virus among rodents.

Financial support: FAPEMIG/ CNPq/ CAPES

155 - PRODUCTION AND PURIFICATION OF DENGUE VIRUS 3 NS1 RECOMBINANT PROTEIN IN *ESCHERICHIA COLI* SYSTEM

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Dengue is currently the most common arboviral disease worldwide and is caused by the *Dengue virus* (DENV) including serotypes 1-4. DENV belongs to the *Flavivirus* genus of the *Flaviviridae* family and transmitted among humans by *Aedes* mosquitoes. Primary infection with any of the four DENV serotypes typically results in mild dengue fever and provides long life immunity to the infecting strain. However secondary infection with different *Dengue virus* serotypes is associated with an increased risk of developing dengue hemorrhagic fever. DENV is a positive-sense, single-strained RNA virus composed of the three structural proteins: designated C (core protein), M (membrane protein) and E (envelop protein) and seven non-structural (NS) protein, NS1, NS2a, NS2b, NS3, NS4a, NS4b and NS5. Glycoprotein NS1 appear to be essential for virus viability although no precise function has been ascribed yet to it. Most currently available commercial dengue diagnostic kits rely on the use of whole virus antigens and are consequently associated with false positives due to serologic cross-reactivity, high cost of antigen production, and biohazard risk. This has prompted the need to develop an alternate antigen to replace the whole virus antigen in diagnosis tests. The NS1 of *Dengue virus* is a useful target for diagnostics of dengue infection since the protein is abundantly circulating in blood during the acute phase of the dis-