

*Human Virology: HV*



65 samples in 2010 and 425 samples in 2011. The major dengue serotype circulating during the 2006 and 2007 epidemics was DENV-3, which is an indication of its recent introduction in the city. Saint Louis encephalitis virus (SLEV) was detected in patients with clinical diagnosis of dengue. Among the DENV positive patients in 2008, 90 were infected by DENV-2, in a clear reemergence of this serotype, which has been circulating in SJRP since 1998. DENV-1 was detected in two patients in the second semester of 2008, other patients in 2009 and in the majority of patients in 2010 and 2011. It is likely that the serotype that circulates in the second semester of one year is going to be the main serotype next year. DENV-1, DENV-2 and DENV-3 have co-circulating in the city and these data suggest a dynamical circulation with a continuous emergence and reemergence of serotypes. Usually poor areas are the source of viral infection when a serotype is introduced but as years pass, the viruses spread all over the city. Clinical and epidemiological data cannot be the main source of final diagnosis. The recent introduction of DENV-4 is extremely alarming. When a new serotype is introduced in one site, it is going to find a susceptible population and may cause important outbreaks. Surveillance and control methods should be used to retain the spread of this serotype and to consequently avoid a likely increase in hemorrhagic clinical manifestations due to the recent circulation of other serotypes in the municipality.

#### **HV212 - EVALUATION OF DENGUE CASES TRANSMISSION IN SÃO JOSÉ DO RIO PRETO (SP) FROM 2001 TO 2010 THROUGH EPIDEMIOLOGICAL DATA.**

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Dengue is a disease that generates important economic and health burdens and is caused by four different serotypes (DENV 1-4) that produce a wide range of symptoms. São José do Rio Preto – SP (SJRP) has been reporting dengue cases since 1990. DENV-1, DENV-2 and DENV-3 were introduced at different occasions, causing major epidemics. The aim of this study is to evaluate dengue transmission from 2001 to 2010 with epidemiological data. We have gathered data from the Information System for Notifiable Diseases (SINAN) and from the Municipal Epidemiological Surveillance Unit to assess: number of cases; dengue status; incidences; mortality; serotype prevalence; dengue distribution according to age; and incidence according to

sex. DENV-1 was the first serotype circulating in the city. After the introduction of DENV-2, SJRP experienced the worst incidence (1,903 cases/100,000 inhabitants) up until that moment (2001). However, incidences started to decline mostly because of the massive transmission of DENV-2. In September 2005, DENV-3 was introduced in a poor area of the city, causing high incidences in the 2006 and 2007 (respectively 2,962 and 2,339 cases per 100,000 inhabitants). Despite control measures were initiated at critical transmission areas, they were not sufficient to restrict the spread of the virus, mostly because of a naïve population and an abundant vector population. DENV-1 was reintroduced later in 2008 and caused the worst outbreak in 2010 (5,906 cases/100,000 inhabitants). Interestingly, after the introduction (or reintroduction) of serotypes, the highest incidence was among people with 15 to 19 years of age. The incidence among women and men were similar. Deaths caused by dengue were higher in 2010 (n=11) with a coincident increase in dengue hemorrhagic manifestations. The analysis of epidemiological data can provide important information on how the viral spread patterns will occur within different genders, ages and areas.

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#### **HV213 - ACUTE FLACCID PARALYSIS (AFP) CASES EXAMINED AT INSTITUTO EVANDRO CHAGAS (IEC) IN THE PERIOD OF JANUARY/2008 TO JULY/2011.**

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Acute flaccid paralysis (AFP) caused by wild poliovirus have been eradicated worldwide, consequently, those associated with other enteroviruses - non-polio enteroviruses (NPEV) - have been reported more frequently. These viruses are about 27 nm in diameter, has single-stranded RNA and its transmission is preferably fecal-oral, affecting mainly children. Nowadays in Brasil these cases are studied in two research institute one of them Instituto Evandro Chagas (IEC), linked to the Ministry of Health and located in Ananindeua, State of Pará, northern Brasil. Samples from AFP cases occurring in Acre, Amapá, Amazonas, Pará, Rondônia, Roraima and Tocantins (Northern region) and Maranhão and Piauí (Northeast) are systematically sent to the IEC for diagnostic confirmation. From January/2008 to June/2011, 373 stool samples coming from that area, were used to prepare fecal suspensions according to the polio manual of the WHO, and then inoculated into RD (human) and L20B (animal) cell lines. The samples with CPE were subjected to RNA extraction and RT-PCR test. Of the 373 examined, 24 (6.4%) were positive for viruses, being 1 (4.2%) poliovirus 3, 1 (4.2%) adenovirus and 22 (91.6%) NPEV. The distribution of samples (positive/ total) by state

was as follows: Acre 01/30 (3.4%); Amapá 01/17 (5.9%); Amazonas 03/45 (6.7%); Maranhão 05/70 (7.14%); Pará 03/68 (4.4%); Piauí 06/58 (10.3%); Rondônia 04/56 (7.1%); Roraima 1/11 (9.09%) and Tocantins 0/18 (0%). The adenovirus and poliovirus 3 (vaccine) samples were from the state of Maranhão. The most affected age group was 1-5 years old with no sex predominance. Most of the patients lived on the capital of these states. Studies involving enteroviruses are still needed, since, particularly polioviruses still circulating in some African countries and the possibility of its return can not be excluded. In addition, NPEV have been associated with AFP cases occurred in different countries including Brazil.

#### **HV214 - COXSACKIEVIRUS B5 INFECTION IN SÃO PAULO STATE, 2004 TO 2010.**

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Coxsackievirus B5 (CV-B5) belongs to the Enterovirus genus (EV), Picornaviridae family. CV-B5 serotype is frequently associated with a wide spectrum of diseases and is one of the most common EV identified in USA and Europe. In Brazil, few reports of usual circulation of this serotype have been described. The aim of this investigation was to show a descriptive analysis of CV-B5 infections detected in patients from São Paulo State, from 2004 to 2010 period. Cerebrospinal fluid (CSF), stool or serum (acute and convalescent phase of the disease), were sent to the Enteric Disease Laboratory, Adolfo Lutz Institute, for EV diagnostic. CSF and stool were inoculated in RD, HEp-2 and VERO cell cultures. Viruses isolated in cell cultures were identified as EVs by Immunofluorescence Assay, Titration by Microneutralization, Reverse Transcription- Polymerase Chain Reaction, and Sequencing. Serological diagnostic was performed with paired sera samples by microneutralization assay. One hundred eighty-four patients had EVs infections. Among these patients, 19.6% had CV-B5 infection (36/184). Among the CV-B5 infection cases, 55.6% (20/36) had neurological disorders (meningitis and encephalitis); 38.9% (14/36) had rashes and 5.6% (2/36) had cardiomyopathies. No fatal outcome was reported. Infant aged < 1 year accounted for 5 cases (14.3%), children aged 1-4 years for 10 cases (28.6%), 5-9 years, for 7 cases (20.0%), and 10-19 years, for 10 cases (28.6%). In 3 patients (8.6%), CV-B5 was detected in persons aged ≥20 years. Males accounted for 23 reports (63.9%) and females accounted for 13 (36.1%). Serotypes with an endemic pattern have stable and usually low-levels of circulation with few distinct peaks. In this study, we observed four discrete peaks in 2004, 2007, 2008 and 2010 registered most of all CV-B5 detections. This study allowed the identification of CV-B5 circulation in São Paulo State, and it will allow the improvement of this infection

surveillance in the population.

#### **HV215 - NOROVIRUS, ADENOVIRUS AND ASTROVIRUS ASSOCIATED TO INFANTILE DIARRHEA AT THE TRIANGULO MINEIRO REGION, MG, BRAZIL.**

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The infantile infectious diarrhea is a public health problem worldwide, and has rotaviruses, noroviruses, adenoviruses and astroviruses as important etiological agents. Noroviruses are common agents of gastroenteritis outbreaks associated to consumption of food and water contaminated or recreational aquatic activities regardless of age, but in recent years its importance as a cause of infantile gastroenteritis has been reported more frequently. The importance of enteric adenovirus and astrovirus in childhood diarrhea is not yet fully defined, they are also identified in some studies, but often with a lower prevalence compared with rotavirus and norovirus. In Brazil, data on characterization of viral gastroenteritis outside the biggest cities are scarce, so the aim of this study was to evaluate the prevalence of Norovirus, Adenovirus and Astrovirus in fecal samples from children with gastroenteritis, which had previously been screened for rotavirus, in Uberaba and Uberlândia, MG, between 2006 and 2010. Enzyme immunoassays were used to detect virus in stool samples: "RIDASCREEN Norovirus 3rd Generation", for the determination of Noroviruses Genogroups I and II; "RIDASCREEN Astrovirus" and "RIDASCREEN Adenovirus", all from R-Biopharm AG, Germany. From 862 samples analyzed, 189 were positive for at least one viral agent, with 131 (15,2%) positive for norovirus, 39 (4,5%) positive for adenovirus and 19 (2,2%) positive for astrovirus. In general, the results showed a higher prevalence of viral infectious diarrhea in hospitalized patients, compared to outpatients, and the most affected age group was that of 7 to 12 months. Considering the whole study period in both cities, the prevalence of norovirus infection was higher than that of rotavirus, held earlier in these same samples. Continuous monitoring is important to follow the viruses disseminations, contributing to the knowledge of the epidemiology of viral diarrhea agents and providing subsidies for further studies.

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#### **HV216 - OPTIMIZATION OF RESTRICTION FRAGMENT LENGTH POLYMORPHISM (RFLP) TECHNIQUE FOR DETERMINATION OF HEPATITIS C VIRUS (HCV) GENOTYPES**