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Paper Poster Session

What is hot in diagnosis of viral infections

Detection of the emerging rotavirus g12p[8] genotype at high frequency in Brazil in 2014: successive replacement of predominant strains

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Background: The continuum characterization of circulating RVA genotypes is essential to understand how vaccine introduction could impact virus epidemiology. In the present study, an unexpected rapid changing pattern of RVA genotypes distribution in Brazilian population during three followed seasons is described.

Material/methods: From January/2012 to December/2014, a total of 3441 fecal specimens were collected from collaborating centers across Southern, Southeastern and Midwest Brazil, and likely to be representative of Brazilian population. All specimens were screened for RVA using ELISA, and genotyped by RT-PCR. Differences in proportions were tested using Chi Squares. A *p*-value of less than 0.05 was considered statistically significant.

Results: RVA was detected in 19.7% (677/3441). G3P[8] remained prevalent in 2012 (37.6%, 69/185) and 2013 (40.1%, 74/186) ($\chi^2=0.107$, $p=0.743$), but declined markedly in 2014 (3.5%, 10/281) ($\chi^2=71.770$, $p=0.000$). G12P[8] was second highest strain in 2012 (22.7%, 42/185), decrease rapidly in 2013 (2.7%, 5/186) ($\chi^2=26.224$, $p=0.000$) and re-emerged as the predominant genotype in 2014 (86.6%, 243/281) ($\chi^2=118.299$, $p=0.000$). From July/2014, G12P[8] was the single genotype detected in all regions studied.

Conclusions: The present study raised the hypothesis of a possible G12 outbreak being in progress. Nationally, the Hospital-based Information System surveillance data confirmed the long term decline in gastroenteritis hospitalization observed in Brazil after RVA vaccine introduction. Nevertheless, the sharp increase in diarrhea hospitalization prevalence from 2013 to 2014 observed in Southern and Southeastern regions is consistent with what appears to be an outbreak of G12P[8]. Furthermore, in 2014, the FIFA World Cup was held in Brazil, and the introduction a novel RVA strain was a real threat, given large numbers of visitors from areas with ongoing G12P[8] genotype transmission. Moreover, this event occurred right before the beginning of the RVA seasonality in the country. Worldwide, the emergence of genotype G12P[8] as an epidemiologically important strain could raise new concerns for RVA vaccine development. However, despite the possible emergence of new strains, vaccination has been shown to reduce the disease incidence of RVA infection and remain below pre-vaccination levels. Continued surveillance is needed to verify the effectiveness of the Rotarix™ vaccine in Brazil together with potential emergence of unusual genotypes.