

## ASTROVIRUS IN FAECES OF CHILDREN WITH ACUTE GASTROENTERITIS IN RIO DE JANEIRO, BRAZIL

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The term astroviruses was first used by C. R. Madeley & B. P. Cosgrove (1975, *Lancet*, 2: 451-452) to describe distinctively shaped virus particles that they detected by electron microscopy (EM) in faecal specimens from children with gastroenteritis. They occur worldwide, mainly during the winter months, in temperate zones. Illness is observed in children with an incubation period of three or four days. Symptoms most frequently observed are diarrhoea and fever, vomiting being uncommon. The diarrhoea usually lasts only two or three days but occasionally 10-14 days. In the immuno-deficient, however, it can continue for many months (Madeley & Cosgrove, 1975, *Lancet*, 1: 1297).

Astroviruses consist of naked virions with 28-30 nm in diameter having a characteristic structure (star shaped appearance), showing buoyant densities in CsCl of 1.35-1.37 g/ml. The genome of human astroviruses is a ssRNA, containing about 7500 nt and four structural proteins (VP1 to VP4) have been identified by SDS-PAGE (J. B. Kurtz, 1988. *Astroviruses*, p. 84-87. In M. J. G. Farthing, *Viruses and the gut*. SK & F, England).

The true incidence of astrovirus infection has been difficult to establish because of the lack of convenient detection and identification techniques, EM being the principal methodology of diagnosis. Unfortunately the characteristic star are only visible on a small proportion of

particles making recognition impossible because they are coated with antibodies. J. B. Kurtz & T. W. Lee (1981, *J. Gen. Virol.*, 57: 421-424) reported serial cultivation of astroviruses in tissue cultures (LLCMK2 and HEK cells) with the aid of trypsin. Recently, J. E. Hermann et al. (1988, *J. Infect. Dis.*, 158: 182-185), confirmed the cultivation of astroviruses and described five different serotypes among the human astroviruses. Willcoks et al. (1990, *Arch. Virol.*, 113: 73-81) obtained a successful for the growth of human astroviruses directly from clinical samples in CaCO<sub>2</sub> cells.

Studies on the aetiology of acute gastroenteritis in Rio de Janeiro, carried out during the last ten years demonstrated that rotaviruses (E. Lampe et al., 1979, X Brazilian Symposium of Microbiology; H. G. Pereira et al., 1983, *J. Hyg. Camb.*, 15: 203-209) and adenoviruses (J. P. G. Leite et al., 1985, *J. Med. Virol.*, 15: 203-209) are the most common viruses found in faecal specimens. From March to September 1981 we received 118 faecal samples collected from children under two years of age, with acute gastroenteritis, receiving medical care in paediatric wards, PROSIM, São João de Meriti, Rio de Janeiro. Examination by EM revealed astroviruses in the five samples (4.2%), rotaviruses in 14 (11.9%) and adenoviruses in nine (7.6%) (J. P. G. Leite et al., 1982, I National Symposium of Virology). All children with astrovirus infection had diarrhoea and mild fever (37.5 °C). Although rotavirus and adenovirus were detected in several different months and from other hospitals during this year, astrovirus positive samples were clustered essentially in March (three positive samples) and April (one positive sample). No astrovirus particles were seen in additional faecal specimens studied during that period of the following years and no association was observed of astroviruses with rotavirus or adenovirus.

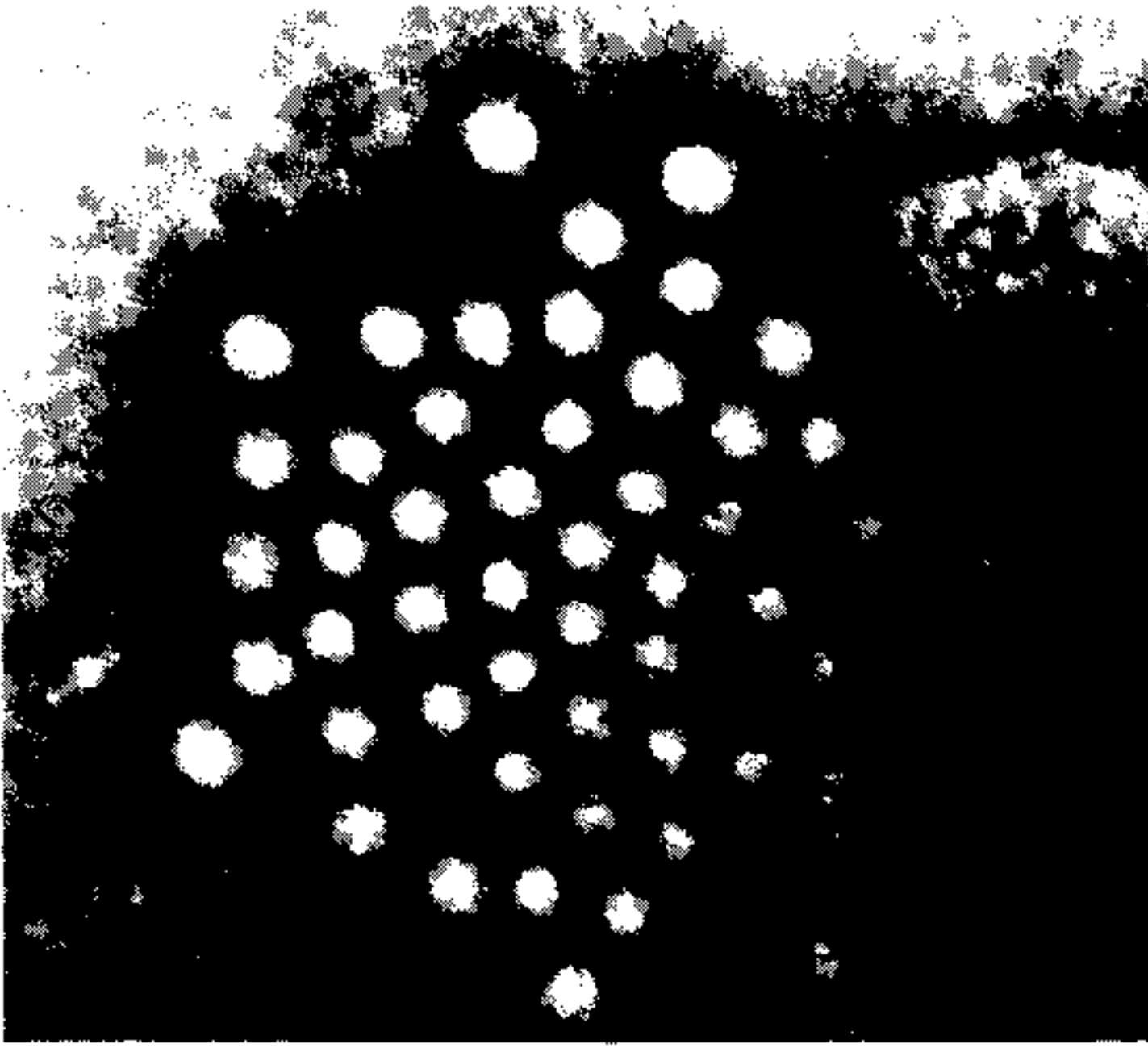
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This work was supported by the Ministry of Health, WHO, Brazilian Research Council (CNPq), FINEP and Brazilian Bank Foundation.

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Received 24 July 1991.

Accepted 21 October 1991.



A immune-complex of astroviruses detected in the stool of a child by direct electron microscopy (157.000 X).

The positive samples were confirmed as astroviruses by Dr Appleton, Virus Reference Laboratory, Colindale, London, using immune electromicroscopy (IEM). We believe that this

is the first description of the presence of astrovirus in Brazilian children. During the last year astrovirus particles were found in faeces from children in São Paulo also using EM as diagnosis (H. Tanaka et al., 1990, V National Symposium of Virology; Stewien et al., 1991, *Rev. Saúde Públ. São Paulo*, 25: 157-158), suggesting that these viruses could be more frequent in Brazil than we previously found.

It would be desirable to have a test simpler than EM to diagnosis astrovirus infections. Recently Hermann et al. (1991, *New Engl. J. Med.*, 324: 1757-1760) developed an EIA test for astrovirus detection. With this aim we are now trying to propagate the virus in tissue cultures in order to obtain reagents to be used in another diagnosis test such as antigen detection by enzyme immune assay (H. G. Pereira et al., 1985 *J. Virol. Meth.*, 10: 21-28).

*Acknowledgements:* to Dr M. S. Pereira (*in memoriam*); to Dr H. Appleton for the confirmation of our observations; to Drs H. G. Pereira and J. P. Nascimento for the critical reading of the manuscript.