ORBIVIRUSES AND GASTROENTERITIS

Sir,—Reports 1–4 in your columns have implicated a virus of the orbivirus group in a high proportion of children with non-bacterial gastroenteritis in different parts of the world.

Using the methods described by Bishop et al. 1 we studied five children, aged 4 to 22 months, successively admitted to hospital with acute gastroenteritis within 24–48 hours of onset of symptoms. In two infants bacterial pathogens were isolated (Escherichia coli O86 : B7 and a salmonella group B in one and E. coli O111 : B4 in the other) but no virus particles. In the other three, particles of the orbivirus type were found. These particles were a mixture of single and double-shelled forms morphologically identical with those described elsewhere. 2

Immuno electron microscopy 3 was performed with antiserum made in Melbourne with predominantly single-shelled virus particles obtained from an Australian child with gastroenteritis. This serum produced coating and clumping of single-shelled particles, while the double-shelled particles were not coated and their characteristic surface structure remained clear (see accompanying figure). This finding indicates that this is probably the same virus (or a closely related strain) as that found in Melbourne. The failure of the double-shelled particles to react with the antiserum shows that the antigenic determinants on the inner and outer shells of the capsid are different.

Attempts to grow this agent in cell lines have so far been unsuccessful. 4 Stool from one of these patients was fed intragastrically to three young monkeys (Macaca radiata), but no symptoms developed.

In India each year an estimated 1·4 million infants and children die from non-cholera diarrheal diseases. 6 Detailed studies have shown that bacterial pathogens can be isolated only in about 28% of these cases and the remainder till now have been of unknown etiology. 7 If the prevalence of this orbivirus is as great as these preliminary studies suggest, it is clearly a problem of considerable public health importance and may well be responsible for a large part of the estimated mortality.

We wish to thank Prof. C. K. Job for allowing us to use the electron microscope, and the Wellcome Trust for a travel grant to one of us (I. H. H.).

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Orbivirus particles showing antibody coating on four single-shelled particles on the left and two uncoated double-shelled particles on the right (marker = 100 nm.)