Rotavirus Gastroenteritis

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Rotavirus, as one of the, aetiological agents of diarrhoeal disease, has assumed a considerable importance in recent years in Pakistan (Khan et al., 1982; Baqai et al., 1983) as well as in other countries (Maiya et aL, 1977; Black et al., 1982).

Rotavirus was first visualized in the duodenal biopsies obtained from severally ill infants and young children with diarrhoea (Bishop et al., 1973). Later it was also found in the stool preparations by electron microscopy (Bishop et al., 1974; Flewett et al., 1973).

It is a 70 nm virus particle having a charactertistic wheel like appearance. Human rotavirus has been cultivated in a limited fashion in the tissues or organ cultures but all attempts to grow it in cell cultures have failed (Aibrey and Murphy, 1976).

Rotavirus infection is characterized by severe watery diarrhoea, without blood, persisting from 4-5 days irrespective of the method of rehydration.

Vomiting occurs in nearly all the cases of rotavirus infection and usually present before the onset of diarrhoea. Dehydration is particularly severe in cases between 12-18 months of age. Fever is present in nearly two third of the cases, acidosis, neutropenia and the presence of sugar in stools (Maki, 1981) and occasionally steatorrhoea have also been reported (Thomas et al., 1981). An association between respiratory tract infection and rotavirus is postulated by Lewis et a1 ‘(1979).

During the acute phase of the disease histology reveals blunting of the small intestinal villi with the virus particle in the villous cytoplasm (Davidson et al., 1979). The activities of the .disaccharide enzymes are depressed and in vitro the response of the sodium pump to glucose is reduced (Davidson et a1., 1977).

Significant association was found between viral infection and age. Infection is seldom in new born babies and, if present, is mild (Totterdell et al., 1980). Rotavirus infection is more common between 2-12 months of age (Al Nakib et al., 1980; Sengupta et al., 1981). Low incidence of infection was reported in children of less than 6 months (Gurwith et al., 1981).

There is a controversy as to whether breast feeding protects the infants against rotavirus infection. Some workers state that breast fed infants are less likely to become infected than the bottle-fee (McLean and Holmes, 1980), while others state that neither breast feeding nor the presence of antibody to rotavirus in cord blood appears to be protective (Gurwith et al., 1981). It is believed that rotavirus infection stimulates the production of coproantibodies which does not allow future implantation of these viruses in the intestine (Espinosa Larios and Ruiz-Gomez, 1981).

Rotavirus can also infect elderly subjects especially those with a suppressed immune response (Halvorsrud and Orstavik, 1980; Wandless et al., 1981). Children with high titres of rotavirus in their stools are the potential carriers of infection (Vesikari et al., 1981). Family studies have shown that rotavirus infection spreads rapidly within the household with an incubation period of 1-2 days (Rodrigues et al., 1979). The mode of spread is not clear as to whether it is faecal-oral or air-borne but the rapidity of its spread suggest that the infection might be via respiratory tract (Lewis et aL, 1979). Nosocomial rotavirus infection can occur in children admitted to hospitals for other diseases (Soeharto et al., 1981; Goldwater, 1979).

Rotavirus has an unusual epidemiological feature. It has been mostly reported during the winters (Al Nakib et al., 1980; Black et al., 1980), but this pattern is not applicable to all situations, as significant infection has been encountered throughout the year and more in dry than in rainy seasons (Suzuki et al., 1981).

Rotavirus can be detected by a variety of methods of which ELISA is the most sensitive one (Brandt et

aL, 1981) but a more rapid method, such as agglutination, is necessary for rotavirus detection in stools (Herbert et al., 1981).
Successful management depends mainly upon adequate oral rehydration but severe dehydration will be corrected more rapidly by intravenous fluid (Taylor et al., 1980).
As rotavirus infection is rising it is necessary that rapid diagnostic methods should be available and the development of an effective vaccine could reduce morbidity and mortality in infants and children.

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