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ROTAVIRUS INFECTION IN ELDERLY PATIENTS

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Summary

In the course of an outbreak of non-bacterial diarrhoea in a group of elderly patients in a rehabilitation ward, rotavirus was detected by electron-microscopy in five of 11 stool specimens (45.5%) from symptomatic elderly patients.

This suggests that although rotavirus is usually thought of as a cause of gastro-enteritis in children it should also be considered as a cause of non-bacterial diarrhoea in elderly patients and stool specimens examined for its presence.

Rotavirus gastro-enteritis appears to be a highly contagious disease but appropriate measures can limit its spread.

INTRODUCTION

Rotavirus gastro-enteritis appears to be predominantly a disease of young children (Bryden et al. 1975, Gomez-Barreto et al. 1976, Konno et al. 1978) although adult contacts of infected children may develop the disease (Gomez-Barreto et al. 1976, Kapikian et al. 1976, Von Bonsdorff et al. 1976), including on occasion the grandparents of such children (Rodriguez et al. 1979). It also appears to be commonest in the winter months (Bryden et al. 1975, Kapikian et al. 1976, Konno et al. 1978, Walker Smith 1978).

Two papers have reported rotavirus as a cause of diarrhoea in elderly patients. In one, patients in geriatric wards were reported to be amongst those affected during an epidemic of rotavirus gastro-enteritis which involved all age groups in a small Swedish town (Lycke et al. 1978). In the other, an outbreak of diarrhoea in a long-stay ward of a geriatric hospital was described during which rotavirus was detected in the stools of six out of 11 (55%) symptomatic patients (Cubitt & Holzel 1980).

We report here an outbreak of diarrhoea and vomiting due to rotavirus which occurred during January and February, 1980 among elderly patients in a rehabilitation ward.

The Patients

The outbreak occurred in a rehabilitation ward of the Department of Medicine (Geriatrics). The majority of patients on this ward occupy single rooms but there is a common day area. Over the period from 25.1.80 to 14.2.80, 10 of the 14 female and two of the four male patients developed diarrhoea, preceded or accompanied in nine cases by vomiting. The average age ($\pm$ s.d.) of the 18 patients on the ward was 83.9 ($\pm$ 7.4) years and of those who developed symptoms 85.1 ($\pm$ 6.7) years. Three female members of staff also developed diarrhoea.

The diarrhoea was watery in character with usually fewer than eight stools per day. Its duration varied from 12 hours to nine days but was 72 hours or less in the majority. A fever of 38°C was recorded in one patient who had a concurrent chest infection. Rotavirus is thought to be spread by the faecal/oral route and isolation procedures may be required to bring an outbreak under control. In this case when rotavirus was identified as the likely cause of the diarrhoea the ward was closed to further admissions and those patients who had symptoms were nursed in their own rooms. None required intravenous fluids or became hypokalaemic and all recovered from the infection.

Fig. Clumped rotavirus. (Magnifications are approximately (a) $\times 20\,700$, (b) $\times 58\,200$.)

The source of the virus was not established although the first patient to develop diarrhoea had been recently admitted to the ward.

Diagnostic Techniques

Rotavirus is identifiable in stools but specimens should be obtained during the acute phase of disease, or within a few days of onset, since the particle count falls rapidly during convalescence. We obtained such specimens from the symptomatic patients together with several from those without symptoms. The samples were examined for the presence of rotavirus by electron-microscopy (EM) which is the method of choice for speed and reliability. Briefly, light faecal suspensions are clarified by centrifugation and the virus-containing supernatant sedimented on to EM grids by a lower gravitational force (Narang & Codd 1980). The grids are negatively stained with phospho-tungstic acid and examined for the particles which have a characteristic appearance at a magnification of approximately 25 000 (Fig.).

RESULTS

Stool specimens from eleven of the symptomatic patients were examined and *Salmonella*, *Shigella*, *Campylobacter* and enteropathogenic *E. coli* were not isolated. Rotavirus particles were, however, seen on electron-microscopy in five of the 11 (45.5%) stool samples, corona virus was seen in one. No virus-like particles were seen in the stool samples obtained from five of the six asymptomatic patients.

DISCUSSION

Kay (1978) has pointed out that the fall in T-cell-dependent antibody synthesis with age could compromise normal immune functions leading to an increase in the incidence of infections. This has relevance in relation to rotavirus gastro-enteritis where it has been suggested (Cubitt & Holzel 1980) that patients of the 60-90-year age group may be at risk of developing the infection because of relatively low levels of antibodies to rotavirus, with the continuing fall in titres of these antibodies after three years of age until they are almost undetectable in sera from those over 70 years (Elias 1977). The antibody response of all patients in the ward at the time of this outbreak of diarrhoea and vomiting is being investigated.

The finding of rotavirus in stool samples from symptomatic but not from asymptomatic patients suggests that rotavirus infection was the cause of diarrhoea in the elderly patients in this longer-stay ward. It is suggested that rotavirus should be considered as a possible cause of diarrhoea occurring in such patients when routine bacteriological examinations of stool samples have failed to reveal a causative agent.

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