

ROTAVIRUS GASTROENTERITIS IN CHILDREN: ANTIGEN DETECTION USING ENZYME IMMUNOASSAY TECHNIQUES.

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INTRODUCTION

Rotaviruses are a major cause of diarrhoeal disease in human infants and young animals. Acute gastroenteritis is a very common illness with a significant public health impact. It is estimated that five million deaths occur annually from this disease in developing countries.

Rotaviruses are classified in the Reoviruses family. The viruses are non-enveloped and have double icosahedral capsid shells. The genome consists of double stranded segmented RNA. The complete particles are 70 nm in diameter and are infectious.

Rotaviruses have a wide host range. Besides humans they also infect a wide range of animals.

There are at least two major subgroups and six serotypes of human Rotavirus. They present common antigens and can be detected by complement fixation, immunofluorescence and enzyme immunoassay tests.

METHOD

Stool specimens or rectal swabs from infants and children up to the age of fifteen years, who were suffering from gastroenteritis, were examined for rotavirus by antigen detection using the

"Sandwich -Principle" of enzyme immunoassays. Beads coated with antibody against Rotavirus were incubated with the sample. The antigen, if present, binds to the antibody coated on the bead. After washing, to remove unreacted sample, the beads were incubated with enzyme-labelled antibody. Excess antibody was removed by washing and the beads were incubated with enzyme substrate. The intensity of the colour developed is proportional to the amount of virus bound and locked in the sandwich. The data obtained was analysed for seasonal variation, age groups and symptomatology for Rotavirus infections.

SYMPTOMATOLOGY

In a retroactive study involving 108 cases of Rotavirus confirmed infections for age groups between neonates to eight years, the following statistics on symptomatology were obtained; n=108

	Cases
Vomiting	62
Diarrhoea	96
Fever	78
Abdominal pain	74
Respiratory symptoms	32

These cases occurred during the period 1990 - 1994 and the data obtained by retrieval of the patients' clinical notes. Rotavirus confirmed positive cases with poor history taking in clinical notes were eliminated from this study.

COMMENTS

From the study it may be concluded that rotavirus infections occur throughout the year but especially predominate in the first six months. The virus particularly infects infants and less commonly children up to the age of ten years, but any age group may be affected. The main symptoms for rotavirus infections are acute diarrhoea, vomiting and abdominal pain.

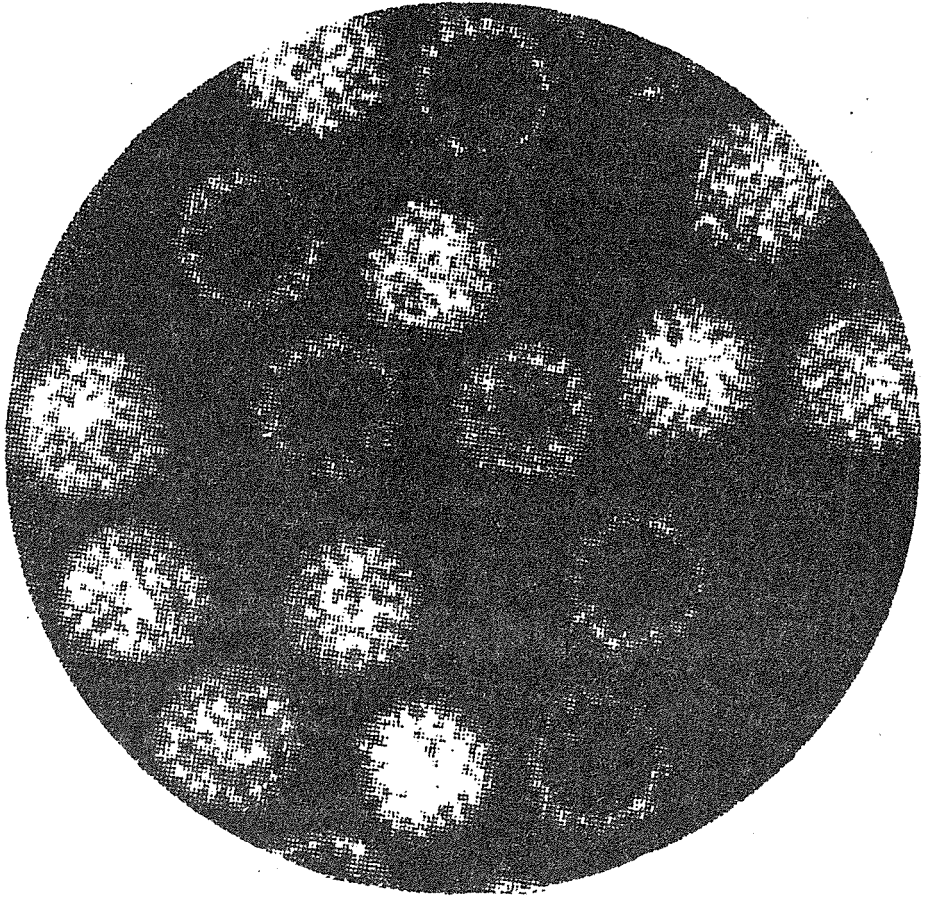
REFERENCES

Middleton PJ, Szymanski MT, Petric M. Viruses associated with acute gastroenteritis in young children. *Am J Dis Child.* 1977; 131:733-7.

Ryder RW, McGowen JE, Hatch MH, et al. Reovirus-like agent as a cause of nosocomial diarrhoea in infants. *J Paediatrics.* 1977; 90: 698-702.

Echeverria P, Blacklow NR, Cukor G et al, Rotavirus as a cause of severe gastroenteritis in adults. *J Clin Microbiol.* 1983; 18: 663-7.

Saif LJ, Theil KW (editors): *Viral Diarrhoeas of Man and Animals.* CRC Press, 1989.



Electron Micrograph of Rotavirus

ROTAVIRUS INFECTIONS ACCORDING TO AGE GROUPS (YEARS 1990-94)

