ACUTE DIARRHOEA IN INFANTS IN INDIA
SOME AETIOLOGICAL AND EPIDEMIOLOGICAL ASPECTS

W. Mathan, C. K. Jayaram Panicker, & V. I. Nathan
Department of Pathology, Christian Medical College Hospital,
Vellore; Department of Microbiology, Medical College,
Calicut and The Wellcome Research Unit, Christian Medical
College Hospital, Vellore, India.

It is estimated that at least 1.4 million children under
the age of 5 die due to non-cholera acute diarrhoeal dis-
ases every year in India. Very little is documented
about the epidemiology and aetiology of this problem of
considerable public health importance.

In southern India the epidemiology of acute undifferentia-
ted diarrhoea (AUD) was studied in a rural (Mathan, 1970)
and a semi-urban (Kamath et al. 1969) population sample.
In both population groups the incidence of acute diarrhoe-
al disease was highest in children below 5 years of age.
The attack rate in the semi-urban children was slightly
but not significantly higher than in the rural children.
The attack rates in southern India were less than the rates
reported by Bingle and his colleagues (1964) from U.S.A.,
a difference probably due to differences in the criteria
for reporting cases of AUD. However, this observation
does raise the question whether subclinical "infections"
due to the contaminated environment in which southern
Indian rural children live gives a degree of immunity to
"clinical" illness.

Recognisable enteropathogenic bacteria were found in approx-
imately 30% of the illness episodes in these children.
Conventional enterovirological techniques failed to show
a causal relationship between excretion of enteroviruses
(in 30% of children at any one time) and AUD. So although
these studies defined the epidemiological problem, very
little new light was thrown on aetiology.

The discovery by Bishop and coworkers (1973) of Rotavirus-
es in jejunal mucosal biopsy in children with non-bacte-
rial AUD and the development of direct electron microsco-
pic examination of faecal extracts for detection of viral
particles have revolutionised the understanding of AUD in
children. An aetiological study of AUD was carried out
using careful bacteriological studies in association with
direct electron microscopy of stools (Malik et al. 1977;
Albert et al. 1977). This aetiological study of 50
children below the age of 2 years who were hospitalised
with acute gastroenteritis showed that in 33 of the child-
ren (66%) one or more bacterial pathogens were present in
the stool. In 13 children (26%) rotaviruses were detected in the stool - 4 of these 13 had associated enteropathogenic E. coli also in the stool. Virus particles other than rotavirus were seen in the stools of 10 children; adenovirus in association with enteropathogenic E. coli in 2, an enterovirus in 1 and corona virus in 7. The aetiologic significance of corona viruses is not yet understood, although it can cause diarrhoeal disease in animals and a few cases of human illness have been reported from U.K.

The prevalence of rotaviruses in this group of children showed a definite seasonal pattern occurring only in the colder months.

Preliminary analysis of data obtained in an epidemic of infantile diarrhoea in the west coast near Calicut also suggests that the rotaviruses were playing a major role in such epidemics (Panicker et al., 1977). A more detailed survey is under way.

The examination of faecal extracts with the electron microscope has considerably increased the understanding of the aetiology of diarrhoeal disease in childhood. Many questions regarding the epidemiology of this newly discovered particle remain to be answered. The search for these answers is a great challenge to virologists and epidemiologists in tropical developing countries and may lead to a way of preventing this major cause of morbidity and mortality.

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References: