

ROTAVIRUS DIARRHOEA IN ADULTS

A THESIS

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

وَمَا أُوتِيتُمْ مِنَ الْعِلْمِ إِلَّا قَلِيلًا

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INTRODUCTION

Acute diarrhoeal disease due to infectious agents is a common problem in all age groups (Mamel and Patrick, 1982).

It was estimated that more than 500 million episodes of infectious diarrhoea in the world each year, resulting directly or indirectly in 10 million deaths (Farthing 1987).

Rotavirus, Norwalk virus, and Norwalk like viruses are mainly responsible for diarrhoeal disease in man (Kapikian et al., 1980a).

Rotavirus causing epidemics of diarrhoea in adults was isolated first at 1983 in China and designated as adult diarrhoea rotavirus (ADRV) (Hung et al., 1987).

Bacterial pathogens are common causes of acute diarrhoea both in adults and children. The most common bacterial pathogens are enteropathogenic *E. coli*, followed by *Shigella* species, *Campylobacter jejuni*, *Salmonella* species. Enterotoxigenic *E. coli*, *Vibrio cholera*, *Yersinia enterocolitica* are also included (Sethi and Khuffash, 1989).

AIM OF THE WORK

The aim of this work is to determine the causative agents of acute diarrhoea in adults, with special consideration to rotavirus.

This would indicate the importance of these infected adults as a source of infection to infants and children.

REVIEW OF LITERATURE

DIARRHOEA

Diarrhoea is defined as an increase in stool liquidity and weight (more than 200 ml/day), that may be associated with increased stool frequency, urgency and/or fecal incontinence. It can be described according to the onset of occurrence into acute and chronic diarrhoea.

Acute diarrhoea is described as diarrhoea of abrupt onset occurring as a common problem in all age groups and usually due to an infectious cause, like bacterial, viral, protozoal, fungal and food poisoning. Inflammatory enteritis may be caused by local or disseminated systemic fungal infection of normal flora or with host impairment. *Phycomycosis* and *Candida* are the most frequent encountered fungal agents causing diarrhoea. There are major protozoal etiologies of diarrhoea, worldwide; *Giardia lamblia*, *Entamoeba histolytica*, and *Cryptosporidium* species (Guerrant and Hughes, 1979; Ravdin et al., 1988 and Goldfinger, 1991).

Dewitt (1989) in his study on children divided acute diarrhoea according to the intestinal involvement, as he emphasized that small bowel involvement occurs most commonly with rotavirus infection while large bowel involvement is usually due to *Campylobacter*, *Salmonella*, or *Shigella* organisms. Other bacterial pathogens include enteropathogenic *E. coli* (EPEC), enterotoxigenic *E. coli* (ETEC), followed by *Vibrio cholera* and *Yersinia enterocolitica* (Loening et al., 1989).

Koo et al., (1996) found 600 cases of gastroenteritis in US Navy aircraft carriers that were attributed to a viral source.

PATHOGENESIS:

The pathogens either invade the bowel wall (enteroinvasive) like *Shigella*, *Salmonella*, some strains of *E. coli*, *Yersinia enterocolitica* and *Campylobacter jejuni*, or proliferate in the lumen and produce enterotoxins affecting the intestinal functions (enterotoxic), like *E. coli*, *Vibrio cholera*, and *Staphylococcus aureus* (Plotkin et al., 1979).

Some enteroinvasive bacteria (e.g. *Campylobacter jejuni*), can invade the upper small bowel and produce inflammatory diarrhoea. Others, primarily invade the lower ileum (e.g. *Salmonella*) or the large bowel (e.g. *Shigella*) with marked inflammatory response to these invasive organisms and the patients may have some diarrhoea and mild abdominal complaints (Farthing, 1987).

The authors also stated that enterotoxigenic bacteria do not invade the mucosal cells, but grow to large numbers producing enterotoxins that activate either adenylate cyclase-cyclic AMP-or guanylate cyclase- cyclic GMP- with the result of secretory diarrhoea.

Microbial food poisoning can be caused either by actual intestinal infection, as that occurs with *Salmonella* infection (Steffen and Wallis, 1985), or by a toxin performed in the food before it is eaten, as with Staphylococcal food poisoning (Crane and Guerrant, 1988). *Clostridium perfringens* is of intermediate standing, a toxin is produced when the organisms sporulate in the intestine after ingestion (Larson and Borriello, 1988).