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Role of *Entamoeba histolytica* in Acute Watery Diarrhea in Hospitalized Under-five Children

Acute diarrhea is a major cause of morbidity and mortality among children in developing countries and Rotavirus and Enterotoxigenic *E. coli* (ETEC) are the most frequent etiological agents(1,2). Although, *E. histolytica* is an uncommon cause of acute watery diarrhea in under-five children, anti-protozoal drugs (with or without antibiotics) continue to be used in this setting(3). This has been further compounded by the recent increase in the number of formulations containing antiparasitic agents with antibiotics. This case control, tertiary-care hospital based study was conducted to elucidate the role of *E.histolytica* in the causation of acute watery diarrhea in hospitalized under-five children in our setting.

The study was carried out over a three-month period (1 June-30 August, 2001) among the pediatric inpatients of Dr. R.M.L. Hospital, New Delhi. All the patients satisfying the inclusion criteria were included in the study.

Inclusion criteria. Less than 5 year of age and acute watery diarrhea of less than 72-hour duration.

Exclusion criteria. Dysentery, mucoid diarrhea, and history of receiving any antiparasitic drug in the ten days prior to admission. Age and sex-matched controls were selected from among the hospital in-patients, provided they had not had diarrhea in the previous month and, had not received any antiparasitic drug in the last ten days. Information regarding age, sex, place of residence and source of water supply was obtained in a proforma. From each case and control, at least (approx.) 5 mL or 5 g of faeces was collected in a clean, sterile container, marked and dispatched by hand to the pathology laboratory. These samples were examined by one of the authors (RBY) within

30 minutes of collection. Both direct and concentration methods were used to examine the specimen for parasitic ova, blood cell, trophozoites and cysts. Definition of acute diarrhea and dysentery, indications for admission and the treatment protocols used were as per the standard guidelines(2). Mucoid diarrhea was defined as an episode with the presence of mucus in a loose stool (without any visible blood) throughout the entire duration of diarrhea, either reported by parents or noted on microscopic examination. Stool examination was not done on Sundays and public holidays, and after 3 p.m. on weekdays due to administrative constraints. An informed verbal consent was obtained from parents or caregivers of all cases and controls. Ninety-two of the control group parents and none of the cases refused consent. Significance of differences in proportions was assessed by c^2 test using a 5% level of significance as cut-off.

A total of 156 patients and 156 controls were investigated. Age, sex, place of residence and source of water supply were not significantly different between the two groups. Only two children (1.3%) in the study group had evidence of acute infection with E.histolytica (one of these had 4-6 RBC/hpf on microscopy) whereas 12 (7.7%) had cysts of the same organism. In the control group, 14 (8.97%) of the children were cyst-passers whereas none had the presence of trophozoites of *E. histolytica* in stool. Ascaris ova were found in 5 (3.2%) and 2 (1.3%) children and G.lamblia cysts in 3 (1.9%) and 4 (2.6%) children respectively, in the study and control group. On statistical analysis, no significant difference was found between the two groups with respect to *E. histolytica* cyst passage or trophozoites in stool.

Previous studies of hospitalized outpatient children with acute diarrhea from developing countries have reported the prevalence of this organism to vary from nil to 4.9%(4-8). However, prevalence rates of 4-6% in control children have also been reported(4,9). None of the 402 under-3 children with diarrhea in Pakistan had evidence of *E. histolytica* infection as compared to 3.7% of the controls (4). Out of 265 under-5 inpatients with acute diarrhea in Jordan, only 4.9% had evidence of *E.histolytica* infection(5). 2.6% of 152 cases of acute childhood diarrhea in Calcutta were reported to have evidence of *E.histolytica* infection(6) as compared to only 0.5% and 0.6% of under 5 children with diarrhea in Nigeria and Dhaka, respectively(7,8). The report by Shetty et al has been one of the few reports implicating *E.histolytica* as a significant cause of diarrhea in children. In 361 pediatric in-patients with acute diarrhea, *E.histolytica* prevalence upto 20.3% (in 7-12 month age group) were reported(10).

However, on the basis of majority of the published studies, *E.histolytica* is an uncommon cause of acute diarrhea in under five children. Our findings also revalidate previous reports. Further, although stool microscopy was used for diagnosis in the study protocol, on retrospect stool microscopy results would not have contributed to change in therapeutics decision in 155 of the 156 children. We, therefore, wish to reiterate that stool microscopy and antiprotozoal agents do not have any role in the management of under-five children with acute watery diarrhea.

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Giant Occipital Meningocele as a Presenting Feature of Dandy-Walker Syndrome

A 10-month-old female infant, born of nonconsanguineous parents, full-term normal delivery presented with a large swelling over the occipital region since birth. The child could not hold the head. She was playful and recognized parents but could not sit or stand on her own. There were no other congenital abnormalities or family history of neural tube defects. On examination, there was frontal bossing, hypertelorism and mild 'sun-setting' sign. The anterior fontanelle was lax. Local examination revealed a large, pear shaped, pedunculated swelling in the occipital region. It was brilliantly transilluminant, nontender, fluctuant and non-pulsatile. There was no bruit. The physical and mental milestones were delayed. Neurological examination showed no gross motor or sensory deficit. Magnetic resonance (MR) imaging of the brain showed features suggestive of a Dandy-Walker malformation. The posterior fossa cyst formed a giant occipital meningocele with few incomplete septae within. A primary repair of the meningocele was performed. Cranioplasty was not performed. The child developed fulminant bacterial meningitis on the 10th postoperative day and later succumbed.

In 1887, Sutton was the first to describe the association of Dandy-Walker syndrome with occipital meningoencephalocystocele on autopsy (1). The incidence varies between 11-16% in reported series. It might simply