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Clinical Profile of Persistent Diarrhea in a DTTU

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Three to twenty per cent of all acute diarrheal episodes continue to become persistent diarrhea (PD) and contribute to 30-50% of all diarrhea related mortality(1). This work was undertaken to find the prevalence of persistent diarrhea in our Diarrhea Treatment and Training Unit (DTTU) and to identify the clinical risk factors, for this condition.

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Manuscript received: May 1, 1996;

Initial review completed: June 6, 1996;

Revision accepted: January 3, 1997

Subjects and Methods

Of the 1995 children who attended the DTTU between June 1992 to November 1993, 64 had persistent diarrhea (duration >14 days). Eleven of these were admitted with a diagnosis of acute diarrhea which got prolonged into PD during the hospital stay. Sixty four age and sex matched children with acute diarrhea (duration <7 days) served as controls. Detailed history including maternal literacy, pre-admission drug use, feeding pattern, previous history of PD and type and frequency of stools was recorded. Anthropometric measurements, presence and persistence of dehydration beyond 24 hours, malnutrition as per IAP classification, in hospital weight loss and evidence of systemic infection were especially looked for. Routine stool examination was carried out for all patients. Other investigations were asked for whenever indicated. The entire data was entered in a pre-tested proforma. SPSS PC+ was used to calculate the crude odds ratio (OR) and 95% confidence interval (CI) by univariate analysis. Adjusted OR and 95% CI were computed by logistic regression analysis to

TABLE I -Univariate Analysis of the Risk Factors for Persistent Diarrhea.

Risk factors	Cases (n=64)	Controls (n=64)	p value	Crude OR (95% CI)
<i>1. Stool Type</i>				
Invasive	18	8	0.0280	2.74 (1.09-6.87)
Non-invasive	46	56		
<i>2. Stool frequency</i>				
≥ 10/day	38	1	.000001	92.08 (12.0-706.3)
Antibiotics	26	63		
<i>3. Previous H/O PD</i>				
Present	16	5	0.0086	3.93 (1.34-11.51)
Absent	48	59		
<i>4. Breastfeeding</i>				
<i>≤6 mo</i>				
Partial/Nil	10	12	0.569	0.72 (1.55-2.03)
Exclusive	15	13		
<i>7-12 mo</i>				
Partial/Nil	6	8	0.377	0.56 (0.155-2.03)
Exclusive	20	18		
<i>≥ 12mo</i>				
Partial/Nil	2	1	0.540	2.18 (0.172-27.55)
Exclusive	11	12		
<i>5. Top milk</i>				
<i>≤ 6 mo</i>				
Undiluted	8	10	0.84	0.80 (0.05-13.51)
Diluted	2	2		
<i>> 6mo</i>				
Undiluted	7	4	0.063	8.75 (0.56-471.4)
Diluted	1	5		
<i>6. Weaning (≥ 4 mo)</i>				
Inadequate	44	30	0.00017	5.32 (2.14-13.21)
Adequate	8	29		
<i>7. In-hospital weight loss</i>				
Present	22	1	0.00017	5.32 #
Absent	42	63		

(Contd...)

TABLE I (Contd.) -Univariate Analysis of the Risk Factors for Persistent Diarrhea.

Risk factors	Cases (n=64)	Controls (n=64)	p value _m	Crude OR (95% CI)
8. <i>Injudicious drug use</i>				
Present	36	19	0.0024	3.05 (1.46-6.31)
Absent	28	45		
9. <i>Type of drug</i>				
Metronidazole/ Antibiotics	18	5	0.0738	3.93 (0.88-10.23)
Antimotility	18	15		
10. <i>Malnutrition</i>				
Present	48	26	0.00008	4.38 (2.06-9.32)
Absent	16	38		
11. <i>Dehydration</i>				
Present	39	27	0.0338	2.14 (1.05-4.33)
Absent	25	37		
12. <i>Persistence of dehydration</i>				
Present	19	1	0.00001	26.60 (3.40-205.9)
Absent	45	63		
13. <i>Associated illnesses</i>				
Present	15	4	0.0062	4.59 (1.43-14.70)
Absent	49	60		
14. <i>Lactose intolerance</i>				
Present	13	8	0.2327	1.78 (0.68-4.65)
Absent	51	56		
15. <i>Maternal literacy</i>				
Illiterate	56	49	0.1070	2.14 (0.83-5.48)
Literate	8	15		

CI not computed

TABLE II— Significant Risk Associations for Persistent Diarrhea after Adjustment in Logistic Regression Analysis.

Risk factors	p value	OR	(95% CI)
Stool frequency (>10/day)	0.0001	86.00	(11.2-701)
In-hospital weight loss	0.0047	28.05	(4.2-212)
Persistence of dehydration	0.0194	18.67	(2.4-198)
Injudicious use of drugs	0.0107	4.65	(2.2-7.3)
Malnutrition	0.055	3.08	(2.06-9.1)

evaluate the role of independent risk factors for PD.

Results

PD accounted for 3.2% patients attending DTTU with 51 (80%) of the 64 children being below one year of age. The case fatality rate for PD was 3.5% and 38% of all diarrheal deaths were due to PD. Of the 15 risk factors evaluated, 10 were significantly associated with PD in univariate analysis (Table I). Adjustment of all these 15 risk factors to their covariables revealed only 5 of them to be significantly associated with PD (Table II). In order of importance they were stool frequency more than 10 per day, in-hospital weight loss, persistence of dehydration, injudicious use of drugs and malnutrition. The overall correct prediction rate of this logistic model was 86%.

Discussion

The prevalence, age distribution, contribution to mortality of PD was in consonance with earlier reports(2-5). A similar association of risk factors for PD including injudicious drug use, malnutrition, high stool frequency, persistence of dehydration and continued weight loss was noted by others(2-4,6-8). The high risk noted in this study with invasive stools, previous history of PD, inadequate weaning, presence of dehydration and associated illnesses, as also reported earlier(2,3,9), was eliminated on logistic regression analysis. This could be due to removal of confounders. Reports suggest that only 3-5%(1) of PD cases present with dehydration, whereas, in the present series 62% were admitted with dehydration. The sharp contrast could be attributed to the hospital based nature of the study.

Contrary to the previous findings(1), breastfeeding seemed to provide no protec-

tion against PD whereas others(3,6,7,9) have reported an increased relative risk of PD with top milk. Maternal literacy played no role in the development of PD. Evidences for(10) and against(3) this are both available in the literature. Some researchers have found increased risk of PD with lactose intolerance which was not seen in the present study.

It is concluded that proper fluid therapy, nutritional management and avoidance of unnecessary drugs can prevent an acute diarrheal episode from becoming persistent.

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Maternal Abortions and Birth of Down Syndrome Offspring

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Various studies have shown a relationship between maternal history of spontaneous abortion and still births of unknown karyotype and the risk of a subsequent Down Syndrome (DS) live birth (1/2). However, the results of these investigations have been inconclusive (3-6). The present study was, therefore, conducted to evaluate the association between the history of spontaneous abortion and birth of DS offspring.

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*Manuscript received: April 25, 1996;
Initial review completed: June 19, 1996;
Revision accepted: January 14, 1997*

Methods

Four hundred and seventeen cytogenetically confirmed DS cases were identified from those registered over a period of 23 years starting from 1972. All pregnancies reported by the DS patients mothers were considered. Families with phenotypically normal children but who had abortions served as controls.

Results

Of the 417 DS families studied, spontaneous abortions were observed in 48 families (11.5%). On analysing the spontaneous abortions in relation to the birth order of the proband, either before or after DS child, it was observed that spontaneous abortions occurred frequently (78.9%) before the birth of a DS child. However, the frequencies of one or two or three pregnancy losses with reference to the parental age showed that single pregnancy loss was prevalent either before or after DS births and occurred to mothers in the age group 21 to 34 years and to fathers from 25 to 39 years. The reported abortions in the different maternal age groups in DS and controls are depicted in *Table I*. A higher percentage of abortions was documented in DS families (18.9%) in comparison to control families (14.5%). This difference was statistically significant ($p < 0.02$); the odds ratio for the birth of DS offspring with a history of spontaneous abortion was 1.8 (1.44 for abortion before