LOOSE STOOLS IN THE EARLY NEONATAL PERIOD

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ABSTRACT

During a two-year period, the various factors associated with loose stools in the early neonatal period were studied among hospital born babies. Low birth weight babies had a lower incidence of non-iinfectiveloose stools when compared to neonates with a birth weight of more than 2500 g ($p < 0.001$). Newborns delivered by Cesa-rean section ($p < 0.001$) and those born to women with more than two children ($p < 0.02$) had a greater frequency of loose stools. Initiation of supplementary feeding and administration of antibiotics were important factors in causing loose stools. Bacterial etiology could be found only in 9.3% of newborns having loose stools. A later onset of loose stools was noted in those, whose stool culture grew bacterial organisms. Only nine newborns with loose stools required antibiotic therapy. Although loose stools were less common among low birth weight babies, they often required treatment with antimicrobials. None of them developed any complications. Since majority of them are non-bacterial and non-infective, great caution must be exercised before administering antibiotics to newborns with loose stools.

Key words: *Diarrhea, Newborn, Risk Factors.*

Increased frequency of loose stools is a common problem during the early neonatal period often causing anxiety to the parents. The WHO definition of diarrhea, *viz.*, passage of three or more watery stools per day(1) may not be applicable to newborns who show a wide range in the frequency and consistency of stools passed(2). But adequate concern has to be shown when the mother feels strongly that her child is having loose stools. The attending doctor is often in a dilemma as to the need for initiation of antibiotics in such cases. The situation frequently ends up in the babies either being treated overzealously with drugs and consequent hazards of drug exposure or undertreated with the risk of spread of infection. The present study was therefore conducted to analyse the various factors associated with loose stools in the early newborn period and possibly identify situations requiring antibiotic therapy.

Material and Methods

All newborns who were delivered in JIPMER Hospital during the period from January 1985 to December 1986 were evaluated. The newborns considered to have increased frequency if they passed more than five watery or semisolid stools in a day. Since none of the babies developed loose stools during the first 48 hours of life, newborns who were discharged within two

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Received for publication: May 12, 1990;
Accepted: May 20, 1992

days of delivery were excluded from the study. A detailed history regarding any maternal illness, drugs given to the mother, duration of ruptured membranes before delivery, mode of delivery, parity of the mother and gestational age were recorded in a pre-planned proforma. The frequency and color of the stools, presence of blood and mucus in the stools were recorded. The birth weights of the babies were recorded and they were carefully followed up during their hospital stay. Stools were examined by microscopy and sent for culture from those babies who had loose stools. The newborns with signs suggestive of systemic infection and dysentry were treated with antibiotics. The results were analysed using the Chi square test.

Results

Of the 6106 live born babies during the study period, 79.3% newborns were discharged within 48 hours. Among the remaining, 376 (29.74%) had loose stools, more than 5 times/day. The stools were watery in 62.4%, semisolid in 36% and mucoid in 1.6% of cases. There were more than 5 pus cells per high power field in 14 (3.8%) cases. Only two babies were ill and had signs of sepsis. Of these, 21.3% weighed less than 2500 g. Male and female ratios was 1.4 : 1. Seventeen babies (5.5%) were less than 37 completed weeks of gestation. Loose stools were observed less often among low birth weight babies ($p<0.001$)(*Table I*).

Parity of the Mothers: Loose stools developed more often among newborns of mothers with three or more children (*Table I*). Although exclusive breast feeding was advised, these babies were given top feeds by the attendants when the mothers had gone for sterilization.

Mode of Delivery: Newborns who were delivered by cesarean section had

TABLE I—*Loose Stools in Relation to Perinatal Factors*

Factors	Loose stools		Control group		p value
	No.	%	No.	%	
1. Parity of mother					
1	118	31.4	320	38.6	
2	83	22.1	194	23.4	<0.02
≥3	175	46.5	316	38.0	
2. Mode of delivery					
Spontaneous vaginal	181	48.1	568	68.4	
Cesarean	169	45.0	161	19.4	<0.001
Operative vaginal	26	6.9	101	12.2	
3. Birth weight (kg)					
<2.0	31	8.3	67	8.0	
2.0-2.5	49	13.0	223	26.9	<0.001
>2.5	296	78.7	540	65.1	
Total	376	100.0	830	100.0	

increased frequency of stools in comparison to spontaneously or instrumentally delivered babies. The babies delivered by Cesarean were given bottle feeds initially during the first 24 hours (*Table I*).

Onset and Duration in Relation to Bacterial Isolation: Among the babies with loose stools, the onset was between the 3rd and 5th day in 312 (83%) babies. No newborn had loose stools during the first 48 hours of delivery. In 224 (59.6%), increased stool frequency lasted for less than 3 days and in 30 (8%) for more than 5 days (*Table II*).

Stool samples grew *E. coli* in 27 (18.5%), Group B Salmonella in 7 (14.8%), *Salmonella* and *Shigella flexneri* in one. The *E. coli* isolated could not be serotyped due to lack of facilities. There was no outbreak of diarrhea in the nursery during the study period. The rest did not reveal any pathogenic bacteria. Among the culture positive cases, 21 babies (60%) developed loose stools after 5 days of age and the duration was more than 5 days in 18 (51.4%) (*Table II*). The mean time of onset was 3.3 and 6.2 days for culture negative and positive cases, respectively. The loose stools lasted for a mean duration of 2.6 and 5.3 days among culture negative and positive cases.

Antibiotics and Stool Pattern: Loose stools was noted in 58 (14.7%) newborns, after instituting antimicrobials (ampicillin and gentamicin) for other infections like pustules, umbilical sepsis, respiratory distress. The loose stools stopped when ampicillin was discontinued among these babies.

Treatment and Outcome: Out of 376 babies with loose stools, only 9 required treatment and 7 of them were low birth weight. Six of them grew *E. coli* in their stools and one grew *Salmonella*. Two of them had no organism isolated. They were all treated with ampicillin and gentamicin for 7 days. Only in 11 newborns (2.9%), the loose stools persisted for more than 7 days. There were no complications in any of the cases.

Discussion

The frequency and consistency of stools

TABLE II—*Age of Onset and Duration in Relation to Bacterial Isolation*

Age of onset and duration (days)	Culture positive cases		Culture negative cases		p value
	No.	%	No	%	
1. Age of onset					
<3	6	17.1	86	25.2	
3-5	8	22.9	212	62.2	<0.001
>5	21	60.0	43	12.6	
2. Duration					
>3	5	14.3	219	64.2	
3-5	12	34.3	110	32.3	<0.001
>5	18	51.4	12	3.5	
Total	35	100.0	341	100.0	

passed vary among the newborns(2). Sometimes it becomes difficult to differentiate between infective and non-specific diarrhea and the treating physician is in a dilemma as to the need for initiation of energetic treatment. The loose stools in our study commenced within 5 days in 312 (83%) cases and in 224 of them (59.6%) lasted for less than 3 days.

The incidence of loose stools was significantly low among low birth weight babies. Most of these babies were kept in the Neonatal Intensive Care Unit, where they were fed with breast milk or milk preparation with aseptic precaution. This perhaps explains the low incidence of loose stools in these low birth weight babies. Low birth weight babies could also have a lower incidence of transitional stools. This observation needs further study to highlight the importance to be given to loose stools among low birth weight babies. Increased frequency of loose stools in low birth weight babies often required treatment.

There was a higher incidence of loose stools among the newborns of multiparous mothers having more than two babies. There was supplementation of top feeds among them when the mothers had gone for sterilization. The protective role of breast feeding and the lower incidence of diarrhea in breast fed infants is well documented(3-6).

Newborns delivered by Cesarean section were also found to have an increased frequency of loose stools. This also could be due to the invariable introduction of bottle feeds during the first 24 hours as many mothers are sedated and unable to lactate satisfactorily during this period. Some of these (43.7%) mothers were on ampicillin. In our study we found that 14.7% newborns developed loose stools after instituting antibiotics. It is possible that antibiotics alter microbial flora in the intestine and hasten bowel transit time.

Babies who had pathogenic bacteria in their stools had a later onset and longer duration of loose stools. The organisms isolated in this study were *E. coli*, *Salmonella* and *Shigella* in the order of frequency. *E. coli* was the commonly isolated organism in earlier studies(7-11). Only 6 newborns with *E. coli* in the stools and one with *Salmonella* and *Shigella* required treatment. Presence of pathogenic organisms like *E. coli* and *Salmonella* have been reported without causing any symptom(10). Viral isolation could not be done during the present study period. An earlier study from our hospital showed rota-virus in 19% of newborns with diarrhea(12). In other places, rota-virus isolation in asymptomatic newborns has been as high as 32.5%(13).

In conclusion, it was observed that non-infective loose stools is more common than infective diarrhea during the early newborn period. Hence, it does not require any treatment with antimicrobials in majority of the cases. But, when loose stools occurred in low birth weight babies or after the 5th day of life and lasted for more than 5 days, one should look for infective etiology. Administration of ampicillin to the mother or baby and initiation of supplementary feeding were important factors in causing loose stools among newborns.

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NOTES AND NEWS

68TH ALL INDIA MEDICAL CONFERENCE 1992
VARANASI

The 68th All India Medical Conference and the Platinum Jubilee of IMA Banaras Branch is being organized by Banaras Branch of Indian Medical Association from *25th to 30th December, 1992*. The central theme of scientific deliberation would be "Health by 2000 AD" in developing countries.

The scientific programme will include key-note address, symposia and panel discussion on all aspects of Medical Sciences. For free paper presentation submit 3 copies of abstrct of not more than 200 words to Dr. K. Tripathi, Chairman, Scientific Committee, Department of Medicine, Institute of Medical Sciences, BHU, Varanasi 221 005, latest by 31st September, 1992.

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