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Original Research Article

Outcomes of Major Neonatal Gastrointestinal Emergency: A Study in a Tertiary Care Hospital in Bangladesh

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Abstract

Background: In a gastrointestinal emergency, neonatal surgery is a very challenging and difficult task causing high morbidity and mortality. In Bangladesh, the frequencies of such emergency management are not very available. For this reason, we do have not enough research-based information regarding the outcomes and effectiveness of major neonatal gastrointestinal emergency management. ***Aim of the study:*** The aim of this study was to assess the outcomes and effectiveness of major neonatal gastrointestinal emergency management. ***Methods:*** This prospective observational study was conducted in Bangladesh Shishu Hospital and Institute, Dhaka, Bangladesh during the period from January 2018 to December 2018. In total 35 neonates with gastrointestinal emergency treated in the mentioned hospital were included as the study subjects for this study. A predesigned questionnaire was used in data collection. All data were processed and analyzed and disseminated by using MS Office and SPSS version 23 programs as per need. ***Results:*** In this study, as palliative procedures, Sigmoid colostomy, Transverse colostomy, Gastrostomy, Ileostomy were applied in 26%, 17%, 14%, and 6% of participants respectively. Besides these, as definitive surgical procedures Perforation repair and Exploratory lap with release of the band were applied in 20% and 14% of patients respectively which were noticeable. In outcome analysis, we observed, as the incidences of postoperative complication sepsis, wound infection, anopia, and anal stenosis occurred in 14%, 11%, 6%, and 3% respectively. Finally, in this intervention occurrence of death was found at 26%. ***Conclusion:*** Now a day, pediatrics surgery has evolved as a specialty within the province of general surgery. But till now, the management of neonatal gastrointestinal emergencies is a very complex and difficult task for any physician or a team of physicians in any part of the world. Prompt patient transportation, earlier primary diagnosis and the arrangement of modern treatment facilities, and arranging high-tech medical equipment can save a lot of babies from such health issues as gastrointestinal emergencies.

Keywords: Neonatal, Gastrointestinal emergency, Outcome, Anorectal malformations, Hirschsprung disease.

1. INTRODUCTION

In Bangladesh, the frequencies of gastrointestinal emergency management are not so high. In an Indian study [1]. It was reported that intestinal obstruction is the major cause of acute surgical abdominal emergency and there is a need to increase care at all levels of referral in that country for the early management of sick newborns. Surgical emergencies in neonates are usually congenital malformations. Intestinal obstruction in a newborn baby is the most common newborn surgical emergency [2]. In a comparative study on neonatal surgical admissions between two linked surgical departments in Africa and Europe, acquired surgical condition was the most common surgical condition in the Europe hospital whereas a congenital condition (anorectal malformation [ARM]) was the most common surgical condition in the African hospital [1]. The reason for this geographic difference is not readily explainable, but it may be associated with better antenatal diagnosis in Europe

hospitals [3]. The worst prognosis in the case of neonatal obstruction is usually found when it leads to sepsis, perforation, bilious vomiting, and enterocolitis [4]. In India as well as in developing countries, the mortality rates tend to be very high as the infants are generally underweight and brought late to the hospital compared to the western countries [5, 6]. The ultimate survival rates of the neonate with a surgical emergency depend upon the early recognition by the physician who has the opportunity to refer the infant to a pediatric surgical center [7]. Over the last five decades, neonatal surgical mortality has steadily fallen in developed countries due to widespread the availability of neonatal surgeons as well as the dissemination of information and knowledge about newborn surgical emergencies [8]. As a result, most infants with congenital anomalies are diagnosed rapidly and stabilized, and optimized before surgery [9]. Neonatal surgeries are still problematic in developing countries, especially in the emergency setting [8]. This has been attributed to the lack of diagnostic facilities as well as neonatal intensive care units (NICU) [10].

2. OBJECTIVE

General Objective

- To the outcomes and effectiveness of major neonatal gastrointestinal emergency management.

Specific Objective

- To assess the demographic status of participants.
- To evaluate the features and presentations of gastrointestinal emergencies among the participants.
- To assess the treatment procedures and outcomes among participants.

3. METHODOLOGY

This prospective observational study was conducted in Bangladesh Shishu Hospital and Institute, Dhaka, Bangladesh during the period from January 2018 to December 2018. In total 35 neonates with gastrointestinal emergency treated in the mentioned hospital were included as the study subjects for this study. As per the inclusion criteria of this study, only neonates with gastrointestinal emergencies, aged between 2 hours to 28 days were included. Both the birth weight and weight at the time of examination were recorded in favor of all patients. The presence of dyspnea and/or cyanosis, prematurity (Like underdeveloped ear cartilage and breast nodules or sole creases other than weight and gestation) was also noted. Abdominal examination was done with special reference to the presence of generalized/localized distension, visible veins and visible loops of intestine, rigidity, and lump. For the patients, who came with frothy salivation, respiratory distress; an esophagogram was done to outline the esophageal atresia and trachea-esophageal. An X-ray was performed and a variety of ARM was classified where that was necessary. After clinical diagnosis, each case was treated on its own merits. Two basic lines of treatment were adopted. An obvious diagnosis like trachea-esophageal fistula (TOF), ARM, palliative or definitive surgery was done depending on the general conditions of the patient. If the diagnosis was not obvious, a conservative line of management was adopted initially with nasogastric suction, intravenous fluid administration, and appropriate antibiotics accordingly. A predesigned questionnaire was used in data collection. All data were collected, processed, and analyzed by using MS Office and SPSS version 23.0 programs as per need.

4. RESULT

In this study, among a total of 35 participants, 54% were male whereas the rest 46% were female. So, male participants were dominated in number and the male-female ratio was 1.2:1. The majority of the participants were from the <8 days age group which was 63%. On the other hand, the body weight of the babies of the majority number (75%) was between 1500 and 2500 grams. In analyzing the spectrum of gastrointestinal emergencies, we observed 26%, 23%, 20%, and 14% of babies were with anorectal malformations, Hirschsprung disease, duodenal atresia, and malrotation with midgut volvulus respectively. On the other hand, vomiting was found as the most common symptom which was among 60% of patients. In this study, as palliative procedures, Sigmoid colostomy, Transverse colostomy, Gastrostomy, Ileostomy were applied in 26%, 17%, 14%, and 6% of participants respectively. Besides these, as definitive surgical procedures Perforation repair and Exploratory lap with release of the band were applied in 20% and 14% of patients respectively which were noticeable. In outcome analysis, we observed, as the incidences of postoperative complication sepsis, wound infection, anopia, and anal stenosis have occurred in 14%, 11%, 6%, and 3% respectively. Finally, in this intervention occurrence of death was found at 26%.

Table-1: Demographic status of participants (N=35)

Variables	n	%
Gender distribution		
Male	19	54%
Female	16	46%
Age distribution in day		
<8	22	63%
8-14	7	20%
15-21	4	11%
22-28	2	6%
Bodyweight distribution in gm		
<1500	6	17%
1500-2000	17	49%
2000-2500	9	26%
>2500	3	9%

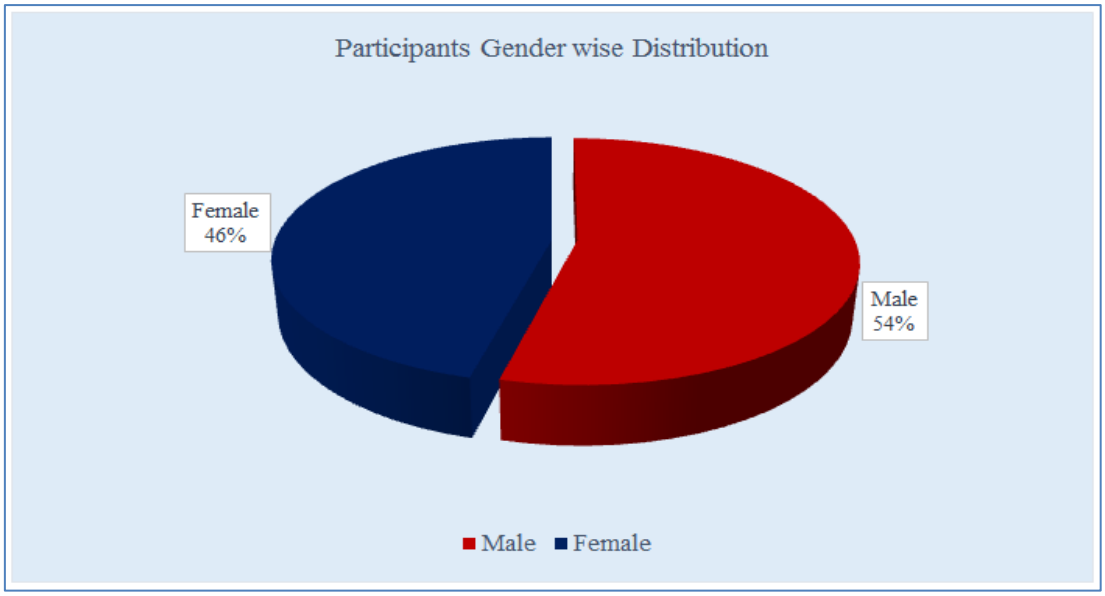

Fig-I: Participants Gender wise Distribution (N=35)

Table-2: Features and presentations among participants (N=35)

Variables	n	%
Gastrointestinal emergency		
Anorectal malformations	9	26%
Hirschsprung disease	8	23%
Duodenal Atresia	7	20%
Malrotation with midgut Volvulus	5	14%
Pyloric Stenosis	3	9%
Perforation	2	6%
Ileal atresia	1	3%
Symptoms among participants		
Vomiting	21	60%
Abdominal distension	15	43%
Not passed meconium	9	26%
Constipation	7	20%

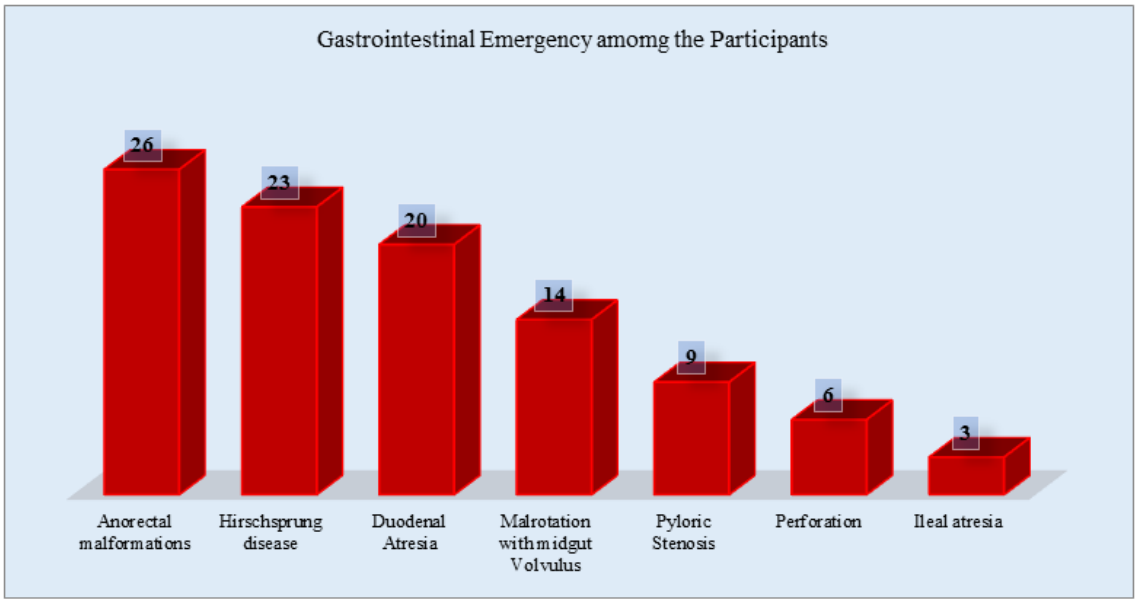

Fig-II: Gastrointestinal Emergency among the Participants (N=35)

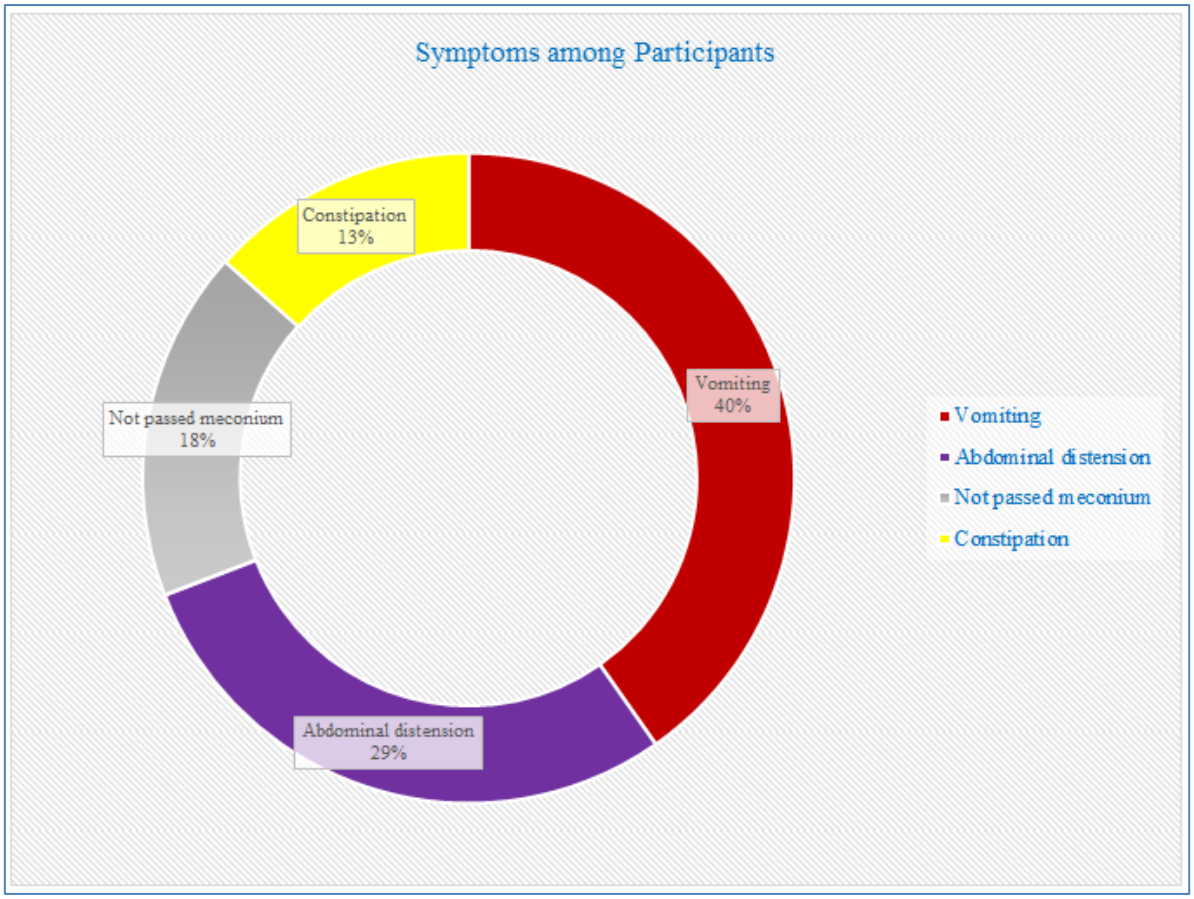

Fig-II: Gastrointestinal Emergency among the Participants (N=35)

Table-3: Palliative treatment procedures performed among participants (N=35)

Variables	n	%
Palliative procedure performed		
Sigmoid colostomy	9	26%
Transverse colostomy	6	17%
Gastrostomy	5	14%
Ileostomy	2	6%
The definitive surgical procedure performed		
Perforation repair	7	20%
An exploratory lap with the release of the band	5	14%
Ligation and division of TOF with end oesophageal to end anastomosis	3	9%
Resection anastomosis after removing an atretic segment	2	6%
Duodenoduodenostomy	1	3%

Table-4: Definitive surgical procedures performed among participants (N=35)

Variables	n	%
Postoperative complication		
Sepsis	5	14%
Wound infection	4	11%
Anopia	2	6%
Anal stenosis	1	3%
Survival		
Survived	26	74%
Death	9	26%

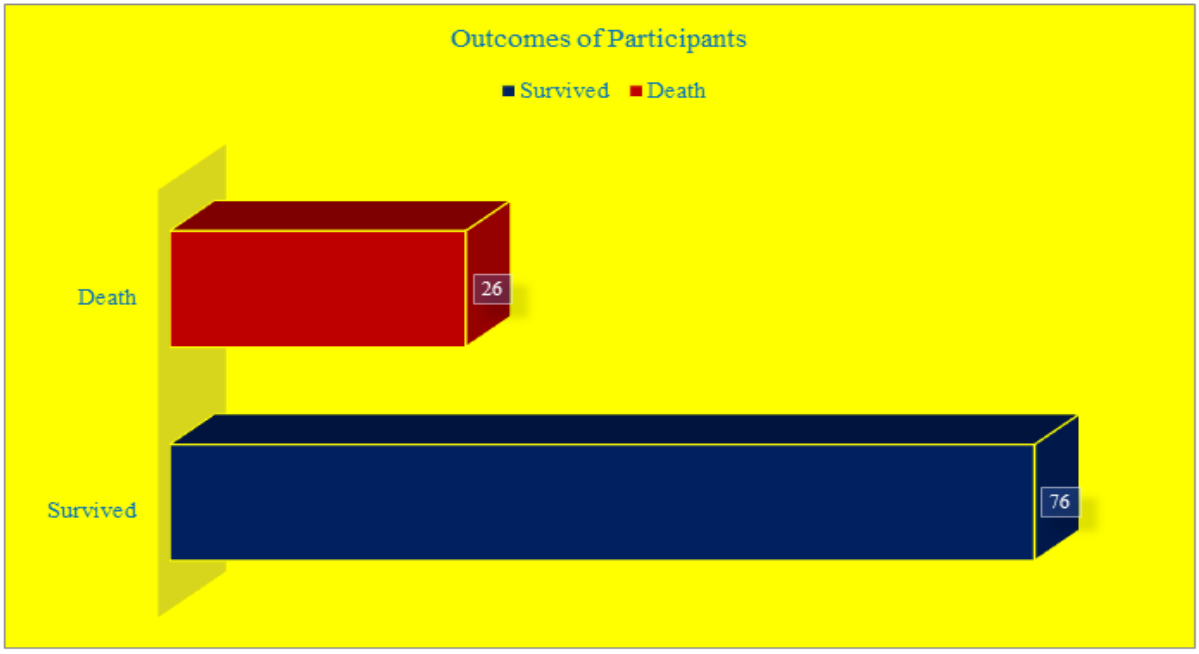

Fig-III: Outcomes of Participants (N=35)

5. DISCUSSION

The aim of this study was to assess the outcomes and effectiveness of major neonatal gastrointestinal emergency management. In this study, among the participants, the male-female ratio was 1.2:1. The majority of the participants were from the <8 days age group which was 63%. On the other hand, the body weight of the babies of the majority number (75%) was between 1500 and 2500 grams. In another study [11] the age at presentation ranged from 2 h to 30 days (mean ± SD: 6.62 ± 7.14 days) and the weight at presentation was found 1.3 to 3.9 kg (mean ± SD: 2.62 ± 0.53 kg). In analyzing the spectrum of gastrointestinal emergencies, we observed 26%, 23%, 20%, and 14% of babies were with anorectal malformations, Hirschsprung disease, duodenal atresia, and malrotation with midgut volvulus respectively. Nearly, similar findings were reported by Hanif *et al.* and Ademuyiwa *et al.* in Nigeria [8, 12]. In this study, as palliative procedures Sigmoid colostomy, Transverse colostomy, Gastrostomy, Ileostomy were applied in 26%, 17%, 14%, and 6% of participants respectively. Besides these, as definitive surgical procedures Perforation repair and Exploratory lap with release of the band were applied in 20% and 14% of patients respectively which were noticeable. In another study [1] among 25 participants palliative surgery was done in 16 cases and definitive surgery was done in 9 cases which ratio was about similar to that of our study. In outcome analysis, we observed, as the incidences of postoperative complication sepsis, wound infection, anopia and anal stenosis occurred in 14%, 11%, 6%, and 3% respectively. Finally, in this intervention occurrence of death was found at 26%. These, findings of the final outcome are comparable agree with the series reported from other parts of the globe such as by Ameh *et al.*, [13, 14] Olumide *et al.*, [15] and some others [16, 17]. Like our study in another study most of the mortalities have occurred postoperatively and this might be adduced to sepsis, the stress of transportation, lack of neonatal intensive care unit, and other facilities [8].

Limitation of the study

Though it was a single-centered study with a small-size so, the findings of this study may not reflect the exact scenario of the whole country.

6. CONCLUSION & RECOMMENDATION

Now a day, pediatrics surgery has evolved as a specialty within the province of general surgery. But till now, the management of neonatal gastrointestinal emergencies is a very complex and difficult task for any physician or a team of physicians in any part of the world. Prompt patient transportation, earlier primary diagnosis and the arrangement of modern treatment facilities, and arranging high-tech medical equipment can save a lot of babies from such health issues as gastrointestinal emergencies. Besides these, we should develop facilities for post-operative care and ICU facilities to reduce the sufferings and mortalities from a neonatal gastrointestinal emergency every year. For getting more specific findings we would like to recommend conducting similar studies with larger-sized samples in several places.

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