Identification of risk factors associated with umbilical hernia in under 5 children: A hospital based study

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Abstract

Umbilical hernia is one of the most commonly encountered abnormalities in early months of infancy and childhood. Though umbilical hernia is a common benign condition which resolves spontaneously during first 5 years of life, it may be a great concern to the parents and other caregivers. Therefore, the high index of suspicion, prompt recognition and thorough understanding of common factors are necessary to ensure their correction and convince the parents to treat. A hospital based cross sectional observational study was conducted in the paediatrics unit of Community Based Medical College & Hospital from March 2013 to September 2013 to determine the factors associated with umbilical hernia. A total of 160 cases of umbilical hernia admitted in paediatrics unit and outpatient department of Community Based Medical College & Hospital were enrolled in the study. Necessary information were collected by detailed history taking, clinical examination and close follow up of the hospital course, using pre-designed questionnaire. Among 160 patients, malnutrition were observed in 21.8% , severe malnutrition was the most common abnormality (45%) followed by moderate malnutrition 28.05%, mild malnutrition 28.05%. Low birth weight were found to have 21.3%, among medical condition, excessive crying were 18.7%, chronic cough were 18.7%, constipation were 17.5%, positive family history 1.9%. Malnutrition and low birth weight are more common association of umbilical hernia.Malnutrition has great impact on developing umbilical hernia. Chronic cough, excessive crying, constipation more or less equally responsible. So early identification of risk factors and proper management and close monitoring are important to reduce the risk of developing umbilical hernia.

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Introduction

Umbilical hernia is common health problem in children. Spontaneous closure of the umbilical ring results in resolution of the hernia during the first years of life in the majority of cases.[1] Expectant management is recommended until the age of five years as a rule.[1,2,3]

Complications are considered rare and are often documented in medical literature as brief reports or short series.[4] O'Donnell KA shown it is occur over 10% of Caucasian babies and in a higher proportion of infants of AFRICAN descent and are more common in premature infants and those with trisomy 21.[5]

An Umbilical hernia can be defined as protrusion of intestine or underlying fat through the abdominal wall and form a bulge under the skin in or around the belly button[umbilicus].6 Umbilical hernia divided into two types, one is congenital and

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another is acquired. Congenital umbilical hernia in that a protrusion of peritoneum through the umbilical ring is present from the time the umbilical cord separates. Acquired type constituting a small percentage and tend to persist throughout the patient's life. Umbilical hernia may be due to simple delay in the closure of the hernia orifice, assisted in some cases by infection of the cord, excessive crying, constipation, excessive coughing and malnutrition and will tend to heal spontenously.[7,8,9]

In one study, incidence of an umbilical hernia was present in 32% of AFRICAN-AMERICAN infants younger than 6 weeks of age and only 4% of Caucasian infants of the same age. At one year of age, incidence was 13% in AFRI-AMERICAN infants and 2% in Caucasian infants. Another predisposing factor for umbilical hernia development is low birth weight. More than 80% infants weighing <1200gm at birth have at least transient umbilical hernias compared with 21% of infants with birth weight greater than 2500gm.[10]

Association between umbilical hernia and nutritional status, a study shown in NIGERIA was that prevalence of moderately malnourished children with umbilical hernia about 5.1% compared with well-nourished had less than 2% of umbilical hernia. Oduntan, reported malnourished with umbilical hernia prevalence was 27.3% compared with well-nourished about 8.6%.[11,12,13]

Grant DB, shown it is the most common feature in a patient with congenital hypothyroidism.[13] Meira weiss shown it occurs about 51% in patient with Down syndrome.[14] Size of umbilical hernia vary from <1cm to 5cm. Mostly occur before the age of 6month,disappear spontaneously by 1yr of age. Even large hernias (5-6cm) disappear by 5-6yr of age.[15] Tow and Burn found that it is a simple anomaly without any associated chromosomal or other organ involvement.[16]

Barnard CN demonstrated that congenital umbilical hernia varied clinical presentation, may be multifactorial in causation.[17] Achiron et al demonstrated that it occurs at early embryological stage.[18] Diagnosis of umbilical hernia mostly clinical and tends to be heal spontaneously without any intervention but it will be the great concern to the parents.

In this point of view this study was conducted to find out the factors associated with umbilical hernia in under 5 children. So far known only a few studies were conducted in Bangladesh and no study in Mymensingh zone. So I want to conduct this study that may help in better management of umbilical hernia to reduce patient's suffering as well as anxiety of parents and other caregivers of that family.

Materials and Methods

An observational cross sectional study was conducted in the Department of Paediatrics, Community Based Medical College Hospital Mymensingh from March 2013 to September, 2013. Written consent was taken from guardian. Children of age from 0 - 5 years diagnosed as a case of umbilical hernia were enrolled as study population. Exclusion criteria were child with hypothyroidism and with Down syndrome.

Data were collected by interview of the parents/ attendants and clinical examination. Data analyzed by SPSS-16 software Programme. Categorical variables were reported as percentage. Correlation was carried out using the X^2-test through determining the association of different variables. After sorting & processing data check list & data coding were made prior analysis to get appropriate outcome. For all analytical tests, the level of significance was set at 0.05 and $p < 0.05$ was considered significant.

Results

The study intended to identification of risk factors associated with umbilical hernia in the department of paediatrics and outpatient department at Community Based Medical College & Hospital, Mymensingh.

Table 1 shows the age distribution of 160 patients. Among the study population of 160 cases it is seen that, 50 (31.3%) within 4-6 months, 50 (31.3%) within 6-9 months, 50 (31.3%) within 10-12months and 10(6.3%) within 14 months.

Table 1: Distribution of the study patients according to age (n=160)

Age	Frequency	Percent
4-6 months	50	31.3
6-9 months	50	31.3
10-12 months	50	31.3
13-14 months	10	6.3
Total	160	100.2
Mean±SD	8.69±2.78	
Range	(4-14) months	

P value measured by Z-test Z = 4.69; p < 0.001 (Significant)

Fig 1 shows sex distribution of study patients. Among the study population of 160 cases it is seen that 90 (56.3%) were male and 70(43.8%) were female. This difference between male and female was statistically not significant.

Fig 1: Distribution of the study patients according to sex (n=160)

p value measured by Z-test Z = 1.57; p = 0.116 (Not significant)

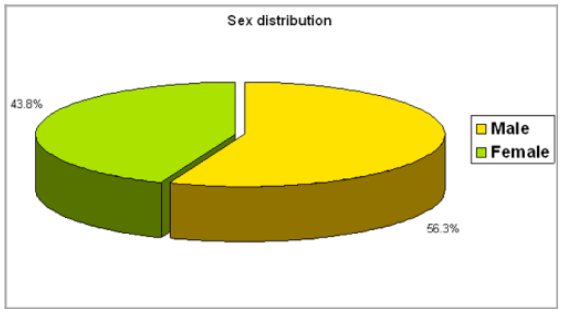

Table 2 shows distribution of study population according to family history. Among the study population of 160 cases it is seen that (3 1. 9%) had positive family history and 157(98.1%) had no family history.

Table 2: Distribution of the study patients according to family history (n=160)

Family history	Frequency	Percent
Positive	3	1.9
Negative	157	98.1
Total	160	100.0

p value measured by Z-test Z = 2.849; p = 0.004 (Significant)

Table 3: shows distribution of study patients according to excessive crying. Among the study population of 160 cases it is seen that 15(9.4%) were crying <6 hours, 10(6.3%) were crying between 6-8 hours, 5(3.1%) were crying between 8-10 hours and normal crying 13(81.3%)

Table 3: Distribution of the study patients according to excessive crying (n=160)

Crying	Frequency	Percent
< 6 hrs	15	9.4
6-8 hrs	10	6.3
8-10 hrs	5	3.1
Normal crying	130	81.3
Total	160	100.0
Mean±SD	2.78±1.97	
Range	(1-10) hours	

p value measured by Z-test Z = 7.799; p < 0.001 (Significant)

Table 4 shows distribution of study patients according to constipation. Among study population of 160cases it is seen that 15(9.4%) having constipation for 10 days,10(6.3%) having constipation for 20 days,3(1.9%) having constipation for 1 month and no constipation 132(82.5%).

Table 4: Distribution of the study patients according to constipation (n=160)

Constipation (days)	Frequency	Percent
10 days	15	9.4
20 days	10	6.3
1 month	3	1.9
No constipation (< 10 days)	132	82.5
Total	160	100.0
Mean±SD	5.91±5.45	
Range	(2-20) days	

p value measured by Z-test Z = 7.799; p < 0.001 (Significant)

Table 5: Shows distribution of study patients according to chronic cough. Among the study population of 160 cases it is seen that 15(9.4%) having cough <3months, 10(6.3%) having cough between 3-6months, 5(3.1%) having cough >6months and 130(81.3%) no chronic cough.

Table 5: Distribution of the study patients according to chronic cough (n=160)

Chronic cough	Frequency	Percent
No chronic cough	130	81.3
< 3 months	15	9.4
3-6 months	10	6.3
> 6 months	5	3.1
Total	160	100.0
Mean±SD	0.69±1.744	
Range	(0-8) hours	

p value measured by Z-test Z = 7.799; p < 0.001 (Significant)

Table 6 shows distribution of study patients according to malnutrition. Among the study population of 160 cases it is seen that 10(6.3%) had mild malnutrition, 10(6.3%) had moderate malnutrition, 15(9.4%) had severe malnutrition and normal nutritional status 125(78.1%).

Table 6: Distribution of the study patients according to malnutrition (n=160)

Nutrition Status	Frequency	Percent
Healthy	125	78.1
Mild	10	6.3
Moderate	10	6.3
Severe	15	9.4
Total	160	100.0

p value measured by Z-test Z = 7.189; p < 0.001 (Significant)

Discussion

Umbilical hernia is one of the common, benign and frequent disorder of the anterior abdominal wall in children.[2] Malnutrition, prematurity, excessive crying, constipation, chronic cough and family history are the important associated factors for developing umbilical hernia. So, early identification, simple assurance of the family is essential. This study was on identifying risk factors of umbilical hernia admitted patients and outpatient department in Community Based Medical College, Mymensingh. Few studies were done so far in Bangladesh in this regard.

In this study,160 patients with umbilical hernia were included. Male: Female ratio was approximately1.3:1. This nearly approaches other studies.[19]

Lassaletta L et al was found to be an important factor. 21% of patients with umbilical hernia having birth weight <2500gm. For this value study nearly approaches other studies.[6] Study conducted by Boyd W showed similar value to this study.[20]

In our study we found statistical significant association between umbilical hernia and nutritional status. Severely malnourished children with umbilical hernia about 9.4% as compared with mild malnutrition about 6.3%.Oduntun SO, also found values approximately near study.[8]

In this study important risk factors of umbilical hernia and association of severe malnutrition and excessive crying 20% low birth weight and excessive crying 21.4% chronic cough and excessive crying 20.0%, constipation and excessive crying 26.7%.Edward, HC and Dulake also found nearly similar results.[12,13]

Though it was not statistically significant but positive family history with umbilical hernia occurs about 1.9% in this study. In this study we found the statistical significance between excessive crying, constipation, chronic cough and malnutrition with umbilical hernia.

Limitation of the study

- The sample size for our study was small. So no definite conclusion could be made.
- We did not use any invasive procedure like blood collection and blood drawn that may cause patient uncomfortable.
- This study was conducted in a single centre.

Conclusion

From the result of our study we can conclude that malnutrition, excessive crying, constipation, low birth weight are common in umbilical hernia, and these abnormalities have great impact on stressful life of patients and caregivers.

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