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CLINICAL PROFILE OF INTUSSUSCEPTION IN CHILDREN ADMITTED TO A TERTIARY CARE CENTRE IN KERALA

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Abstract:

Background and objectives: Intussusception is the commonest cause of bowel obstruction and is one of the common abdominal emergencies in children younger than 2 years of age.The objective of the study was to assess the clinical profile of intussusception in children and the management and the outcome and to assess whether the characteristics mentioned in clinical profile are predictive of subsequent management and outcome of the disease.

Methods: A hospital based descriptive study conducted in a tertiary care centre in Kerala, using purposive sampling technique. 120 children admitted with diagnosis of intussusception fulfilling inclusion criteria and whose parents consented for study were included in the study population, during the study period from November 2018 to June 2020. Detailed history, clinical examination including per rectal examination and USG was done to make diagnosis of intussusception in suspected cases. Follow up is done at 72 hours,1 week after the admission and 1month later. To assess the clinical profile and outcome of patients, frequency and percentage is used. To obtain the association of clinical profile with outcome chi square test is applied.

Results: Outcome of the problem was correlated with age, sex, symptoms, risk factors sonological findings treatment protocol and duration of hospital stay. Out of the 120 children in study population, majority were males(65.8%) with male to female ratio 1.9:1 and majority was in the age group 7- 12 months, which is similar to many other similar studies. Maximum number of cases were in the month of February(14.2%) and November(15%). Majority of the patients(57.5%) presented to healthcare facility within 24 hours of onset of first symptom.Irritability was the most common clinical symptom(62.5%) followed by vomiting(58.3%) and abdominal pain(49.2%). Ileocolic intussusception (96.7%) was the commonest type. Majority of the cases could be managed with hydrostatic saline reduction(73.3%) and significantly lesser number of patient went for surgical intervention(7.5%) and spontaneous resolution(19.2%).

Conclusions: Incidence of intussusception is more common among males and more in the 7-12 month age group**.** Majority of the cases presented to health care facility within 24 hours of onset of symptom and could be managed with hydrostatic reduction technique and had a shorter duration of hospital stay compared to surgical reduction technique. Even recurrent cases could be managed with hydrostatic saline reduction.

Keywords: Intussusception; Intestinal obstruction; Hydrostatic reduction; Spontaneous resolution

Introduction:

Intussusception- a pathological telescoping of a portion of bowel into an adjacent part [1].It is usually due to lymphoid hyperplasia in infancy and early childhood, where as in older children and adults,it is usually secondary to some identifiable pathological lead point. Intussusception has been reported in several studies to have a seasonal variation, with peaks coinciding with the peak incidence of viral respiratory tract infections and diarrheal disease[2]. The currently approved rotavirus vaccines are associated with a slightly increased risk of intussusception as shown by some studies[3].

When the clinical history and physical findings suggest intussusception, an ultrasound is typically performed which is very reliable, noninvasive and gives assessment of bowel viability and reducibility. Reduction of an acute intussusception is an emergency procedure and should be performed immediately after diagnosis, in preparation for possible surgery. Spontaneous reduction of intussusception occurs in about 4-10% of patients. Recurrent intussusception is noted in about 10%, and after surgical reduction it is 2-5% [2]. The classic triad have been shown to be present in less than a quarter of children, making intussusception a difficult clinical diagnosis[1].Due to unknown factors, incidence of intussusception has been observed to an average of about 6-8 cases per month in our center. Thus this study on intussusception is being done, so that it may help primary physicians and pediatricians for early detection, initiating therapeutic measures at earliest and improving outcomes by preventing complications.

Aims & Objectives:

1. To assess clinical profile of intussusception in children
2. To assess the management and outcome of patients who are admitted to pediatric ward with diagnosis of intussusception

3. To assess whether the characteristics mentioned in clinical profile are predictive of subsequent management and outcome of the disease.

Methodology

1. Study design: Cross sectional study

2. Study period: 18 MONTHS

3. Study setting: Pediatric ward, Jubilee Mission Medical College & Research Institute, Thrissur

4. Sampling

i)SAMPLE SIZE: Based on the proportion of clinical profile observed in a previous article[6]"ShakyaVC,Aggarwal CS, Sinha AK, Bhatta NK, Khania S, Adhikary Setal: Childhood intussusception. Journal of Nepal Pediatric society , Vol 31, Issue 1, January 2011"with 95% confidence level and 20% relative allowable error, minimum sample size comes to 64. Considering possibility of drop outs, required sample size comes to around 80.

$$N = \frac{Z_{1-\alpha/2}^{2}\, p.q}{d^2}$$

ii) Inclusion criteria: All children admitted to pediatric ward, Jubilee Mission Medical College & Research Institute, with diagnosis of intussusception, who were willing to participate in the study

iii) Exclusion criteria: Children less than 28 days of age and those who didn't give consent for the study and those who did not come for follow up.

iv) Sampling procedure: All cases admitted in pediatric ward with diagnosis of intussusception , who were willing to participate in the study and meeting the inclusion criteria are included in the study initially. Follow up is done at 72 hours,1 week after the admission and 1month later. Those patients whose follow up data is not available are removed from the study.

v) Methods of data collection:

Data is collected by doing clinical examination, from case sheets and filling up questionnaire, of those who were meeting inclusion criteria and who were willing to participate in the study after getting informed consent

vi) Statistical analysis

To assess the clinical profile and outcome of patients, frequency and percentage will be used. To obtain the association of clinical profile with outcome chi square test will be applied.

Results & Analysis

Majority of children who presented with intussusception belonged to age group of 7-12 months (31.7%) followed by 25-60 months (30%) . Only 1.7% patients were more than 60 months of age. Study group had male predominance (65.8%), with male to female ratio1.9:1. Maximum number of cases were in the month of February(14.2%) and November(15%)

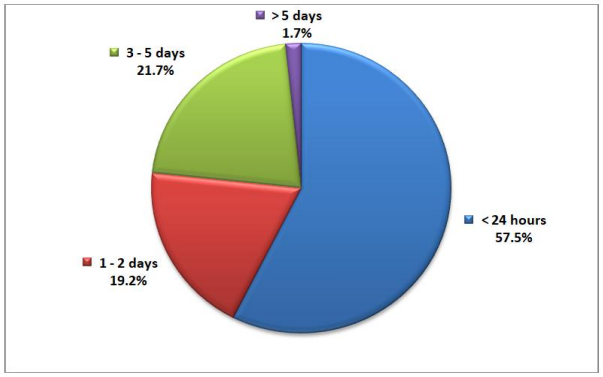

Figure 1: Distribution of duration of presentation from onset of symptoms

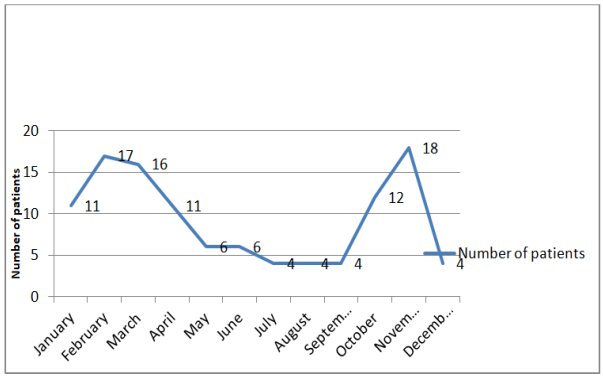

Figure 2: Month wise number of cases distribution among study population

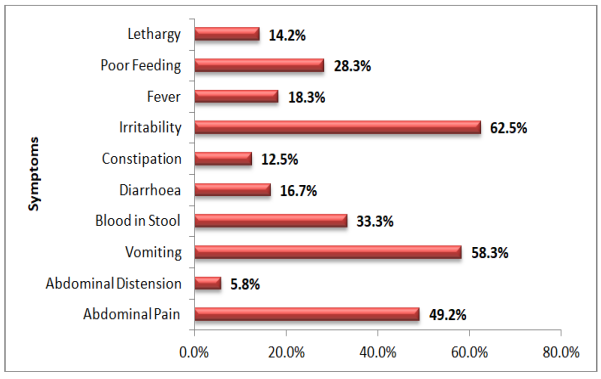

Figure 3: Distribution of clinical symptoms in intussusceptions

Majority of the patients(57.5%) presented to healthcare facility within 24 hours of onset of first symptom, only 1.7% cases had presentation after 5 days.Irritability was the most common clinical symptom(62.5%) followed by vomiting(58.3%) .Majority of the patients had 2 or 3 number of symptoms at the time of presentation.

Tenderness(63.8%) was the most common sign followed by abdominal mass(46.7%). Classical triad of intussusception was noted in only 25.8% cases. A palpable per rectal mass(15%) and blood stained stool(75%) on examination is significantly higher in cases with age less than 6 months. History of recent upper respiratory tract infection was noted in 52.5% of study population. History of recent change in diet(29.2%), early complementary feeding(10.8%) and recent diarrheal disease(9.2%) was also noted. No case of intussusception following rotavirus vaccination was noted in the study. Majority of the cases were ileocolic(96.7%) intussusception followed by ileoileal(2.5%) and colocolic(0.8%). Most of the patients had mesenteric lymph node(79.2%) as lead point, whereas no definite lead point could not be identified in 20% cases and 1 case had meckel's diverticulum as the lead point. Out of the 120 patients, 19.2% cases had spontaneous resolution ,73.3% underwent hydrostatic saline reduction and 7.5% cases were managed with surgical reduction and majority was managed with appropriate intervention within 24hrs of onset of symptoms. Out of the 95 patients(79.1%) who underwent saline reduction, 88 cases(74.2%) were successful. No complications were observed following hydrostatic saline reduction in our study. Recurrence of intussusception after spontaneous resolution or post hydrostatic saline reduction occurred within 24 hours in most of the cases. Gangrene(0.8%) and intestinal perforation(0.8%) were the observed complications in study population. Most of the patients required a mean hospital stay of 2-3 days(90% patients**).** Out of the 120 patients 9 patients(7.5%) have a previous history of intussusception.

Discussion

Intussusception is the commonest cause of intestinal obstruction in children between 5 months to 3 years [2] . Intussusception occurs in approximately 17.7 children/100,000/year in India[8] Present study showed male to female ratio of 1.9:1 suggesting male preponderance which is similar to literature and majority was in age group of 7-12 months with a mean age of 9.5 months. Abdominal pain as presenting symptom is significantly higher in cases with age more than 60 months (100%), 25-60 months (97%) where as irritability as first symptom is significantly higher in cases with age less than 6 months (100%) and 7-12 months (84%) compared to other age groups. Majority of the patients(57.5%) presented to healthcare facility within 24 hours of onset of first symptom,while studies from African countries showed delayed presentation and more complications[4]. A palpable per rectal mass(15% cases) and blood stained stool(75% cases) on examination is significantly higher in cases with age less than 6 months, compared to other age groups,p value is <0.05, which is statistically significant. This finding also highlight the importance of doing a per rectal examination which may help in the diagnosis of intussusception even in this era of sophisticated investigations. Triad of symptoms is significantly higher in cases with age less than 6 months (75%) which is statistically significant. There is a notably higher number case of recent respiratory illness(52.5%) noted in the study compared to recent diarrhoeal disease(9.2%).No cases following rotavirus vaccination was seen in the study similar to Manas et al[10].

In resource limited setting, the preoperative diagnosis of intussusception was made clinically in vast majority of the patients, radiologically in less than 10 % cases and surgically at laparotomy for intestinal obstruction in around 20% cases[4]. The relatively early referral and ultrasound screening of suspected cases clearly contributed to transient, spontaneously resolving intussusceptions being picked up on radiological examination[7]. Majority of the cases were ileocolic(96.7%) which is similar to other studies. Out of the 95 patients(79.1%) who underwent saline reduction, 73.3% were successful and no complications were observed . Most of the patients required a mean hospital stay of 2-3 days(90% patients**)** after hydrostatic saline reduction, whereas surgical reduction cases took longer duration**.** In African countries majority of cases had late presentation, went for surgical intervention and had higher rates of complication and longer hospital stay compared to developed nations[9]. This has been attributed to delayed presentation of disease coupled with lack of trained personnel and unavailability of diagnostic and therapeutic facilities. Spontaneous resolution is significantly higher in cases with age more than 60 months (100%), compared to the cases with age less than 6 months (5%) .Significantly higher proportion of patients who underwent operative reduction had vomiting, red stools, and mass per abdomen as presenting symptoms according to Simon etal[5] . Children who underwent hydrostatic reduction had more recurrences compared to surgical intervention. Recurrent intussusception is noted in 5-8% and is more common after hydrostatic than surgical reduction[2] in majority of literatures. Recurrence of intussusception is significantly higher in cases with abdominal distension (14.3%) blood in stool (12.5%), compared to the cases with no abdominal distension (4.4%) ,no blood in stool (1.3%). In our study, attempted hydrostatic reduction was successful in 5 out of 6 cases of recurrence of intussusception, only one case went for surgical intervention. Therefore age and number of recurrence cannot be regarded as absolute pointers to indicate failure of nonsurgical intervention as shown in study by Simon etal[5]. Failed reduction procedure is significantly higher in cases with abdominal distension (28.6%), blood in stool (17.1%) , abdominal mass (13.0%) compared to the cases with no abdominal distension (5.6%), no blood in stool (1.6%), no abdominal mass . Those underwent direct surgery have higher incidence of constipation (9.1%), with dehydration (16.7%) , showed significantly higher rectal mass (50.0%)blood stained stool (21.4%), triad (20.0%) compared to the cases with no rectal mass (5.3% no blood stained stool (1.4%), no triad (1.5%). Out of the 120 patients 9 patients (7.5%) have a previous history of intussusception, detailed evaluation was done in these patients, which could not point to a specific cause.

Even such cases could be managed with hydrostatic saline reduction if there are no features of bowel ischemia or obstruction.

Limitation

Study was hospital based descriptive study conducted in a tertiary care centre in Kerala, using purposive sampling technique. This is a hospital based study and finding cannot be extrapolated to general population due to lack of proper randomized control. There is significantly high incidence of intussusception rates in our institution compared to global average, which may due to large number large number of referral cases from peripheral hospital which may contribute to bias in the incidence rates. Stool examination for finding causative organism was not done in the study

Conclusion

The study was conducted among 120 cases of diagnosed intussusception. It is likely that the sensitive screening criteria and heightened awareness of the risk of intussusception in the context of a phase III rotavirus trial among the physicians, increased the probability of referral for symptoms that might normally be ignored. Our center being a tertiary care center and radiologist being available 24 hours, hydrostatic saline reduction procedures are done round the clock. This has led to significant rise in the number of cases in the center. Ultrasound guided hydrostatic reduction using saline is a simple and effective technique, can be used to diagnose intussusception, to reduce it and to confirm reduction. Even recurrent cases could be managed with hydrostatic saline reduction.

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