ORIGINAL ARTICLE

A STUDY OF SENSITIVITY AND SPECIFICITY OF ULTRASONOGRAPHY IN DIAGNOSING INTUSSUSCEPTION IN PEDIATRIC AGE GROUP

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ABSTRACT

Background: Intussusception is the most common cause of intestinal obstruction in pediatric age group. Majority of the patients are under one year of age. Patients commonly present with colicky pain, vomiting and abdominal distention; but if the diagnosis is delayed it can lead to intestinal infarction. Ultrasonography is used for the diagnosis of intussusception. The objective of this study was to evaluate the sensitivity and specificity of sonography in intussusceptions in pediatric patients.

Material & Methods: This was a descriptive study carried out in Saidu Teaching Hospital from June 2007 to August 2009. A total of 85 suspected cases of intussusception were included in this study and subjected to ultrasonographic scanning.

Results: Out of 85 patients 45 had positive sonographic evidence of intussusception, 43 were later on confirmed by Surgery, while the remaining two had other pathology.

Conclusion: Ultrsonography is a noninvasive, sensitive and specific method for the diagnosis of intussusception.

KEY WORD: Intussusception, Ultrasonography, Children.

INTRODUCTION

Intussusception is the most common cause of intestinal obstruction in infants and young children.[1,2] It consists of telescoping of proximal segment of bowel (intussusceptum) in to the distal segement (intussusceptions).[1-3] Majority of the children are under one year of age.[1,3] The iliocolic intussusceptions is the most common type.[1,3,4] Small bowel intussusception is very rare and only a few cases are reported in literature.[4-6] Common presenting symptoms of intussusceptions are colicky pain, vomiting, distention of abdomen, red current jelly stool and sometime protrusion of intussusceptum through the anus.[7] Delayed diagnosis can lead to intestinal infarction, perforation and death.[1] On examination there may be sausage shaped mass in right upper quadrant with emptiness in the right iliac fossa. A supine abdominal radiograph may detect intussusception and its complications but may be inconclusive in over 50% of cases.[3] Contrast enema is very efficient modality but is invasive procedure.[7] CT scan and MRI can be used for its diagnosis but because of their non availability in different centers as well their cast make their use very limited. Sonography is very reliable and noninvasive imaging procedure used for diagnosis of intussusceptions.[7,8] It is also of value in the assessment of bowel viability and reducibility.[9]

The objective of this study was to evaluate the sensitivity and specificity of sonography in intussusceptions in pediatric patients.

MATERIAL AND METHODS

This was a prospective study conducted jointly by the departments of Radiology, Pediatrics and Surgery, Saidu Teaching Hospital from June, 2007 to August, 2009. All the patients admitted in children ward with suspicion of intussusceptions were included in this study.

A total of 85 patients were included in this study. All the cases were admitted from hospital emergency/ OPD for signs and symptoms of intussusception. All the children with clinical suspicion of Intussusceptions were admitted in department of Pediatric, after detailed history and examination. Clinical diagnosis was assessed mostly on history of colicky pain, red current jelly stool, distention of abdomen and vomiting and upon signs of sausage shaped mass in the right upper quadrant and emptiness in the right iliac fossa. All

the 85 patients selected were subjected to ultrasound examination of the abdomen. Upon ultrasound examination the most suggestive features of intussusception were hypoechoic mass with central echogenic area (pseudo kidney sign). Out of these 85 patients 45 had positive sonographic evidence of intussusceptions. Those with positive sonographic findings of Intussusception were operated and their findings were recorded. Those with negative sonographic findings were kept under observation, with repeat sonography carried out on the next day showing no evidence of intussusceptions, were discharged with conservative treatment.

RESULTS

A total of 85 patients were scanned, 40 patients had no sonographic evidence of Intussusception and 45 patients had positive findings. All the patients with positive findings were operated. In 43 patients Intussusception was present while in two, other pathology was found. None of the 40 patients who had negative sonograms proved to have Intussusception.

The Table 1 shows that out of 85 patients scanned for Intussusception on the basis of clinical suspicion, 45 were having sonographic feature of Intussusception. After surgery 43 patients proved to have Intussusception,

Amongst the 45 suggestive cases of Intussusception upon sononography were later on proved on surgery as , one was Burkett's Lymphoma of terminal ileum and the other one most probably reduced spontaneously .

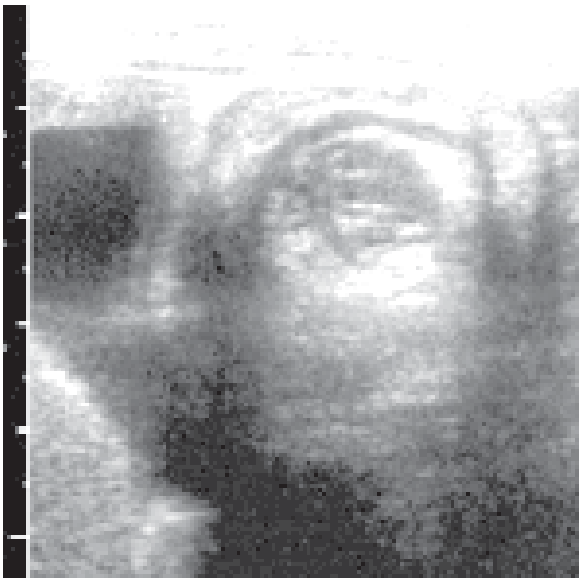

Fig. 1: "Target" sign with a hypoechoic ring of the intussuscepiens surrouning the central echogenic area of intussusceptum.

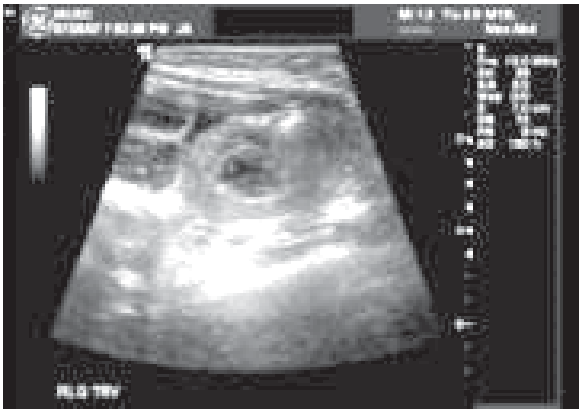

Fig. 2: "Pseudokidney" sign of intussusceptions.

Table 1: Results of Sonographic screening for Intussusception.

Results	Positive (per operation)	Negative (per operation)	Total
Positive sonographic	43	2	45
Negative sonographic	0	40	40
Total	43	42	85

The Table 2 shows that 41 patients had ileo-colic type and 2 ileo-ileal type of intussusceptions.

Table 2: Types of intussusception.

Types of intussusception	No. of cases	Percentage
Ileo-colic	41	95.3
Ileo-ileal	2	4.65

Forty patients were having negative sonographic finding. There was no false negative case in the sonographic study of intussusceptions. Only two did not proved surgically. The sensitivity of sonography in intussusceptions was 100% and specificity of 95.2% with a positive predictive value of 95.5%.

DISCUSSION

In our study we found ultrasound examination of abdomen as a very reliable method of diagnosing Intussusception with high specificity and sensitivity. This is in accordance with other international studies[7,8,10]. There was no false negative

case in our study which means 100% sensitivity and this is also reported by Wright JE, Slater S. and Barzilai M in their studies[7,8]. This means that no intussusceptions was missed by ultrasound examination[10]. In one of the study 88.2% sensitivity is reported[11]. We noticed two false positive cases in all the 45 patients with positive sonographic findings who were operated, this means a specificity of 95.2% and this is also reported by other studies except one study which shows 100% specificity[11].

Most of the cases in our study were ileo-colic except two cases which were ileo-ileal and these findings were confirmed after surgery. It means that small bowel Intussusception is rare in children and also this is often overlooked due to non-specific clinical presentation and spontaneous reduction.[1,5,6]

CONCLUSION

Ultrsonography is a noninvasive, sensitive and specific method for the diagnosis of intussusception with a positive predictive value of 95.5%, specificity of 95.2% and sensitivity of 100%.

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