

Intestinal obstruction in paediatrics; Beyond Imaging - case report

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(Received:05/09/2015, Revised: 01/10/2015, Accepted: 12/10/2015)

Abstract :

Small bowel obstruction is a common surgical condition in paediatric age group. It can present in immediate post natal period or in later childhood. Mechanical obstruction is the most common cause in paediatric age group. Here in we present two cases with small bowel obstruction secondary to Meckel's band and foreign body impaction. The structural cause for obstruction could not be assessed on imaging.

Keywords : Small bowel obstruction (SBO), Mechanical obstruction, foreign body, Meckel's band, Ultrasound/ ultrasonography (USG), Computed tomography (CT), Magnetic resonance imaging (MRI).

I. Introduction :

Small bowel obstruction is a clinical condition that occurs secondary to mechanical or functional obstruction of the small bowel, preventing normal transit of its contents.

Intestinal obstruction occurs in about 1 in 1,500 live births. Congenital obstructive lesions of the intestines can be viewed as intrinsic (atresia, stenosis, meconium ileus, aganglionic megacolon) or extrinsic (malrotation, constricting bands, intra-abdominal hernias, duplications). An attempt should be made to locate the lesion preoperatively to guide the surgical approach. These cases are reported in the context of miss radiological diagnosis.

II. Case report

Case 1:

Toddler presented with history of pain abdomen, non-passage of stools since 4 days, vomiting since 3 days and abdominal distension for 1 day. On the day when the patient developed abdominal distension there was also h/o bilious vomiting. There is no history of foreign body ingestion.

On clinical examination, the patient was irritable with distended abdomen. There was no guarding/ rigidity. There was no palpable mass. Clinical diagnosis of intestinal obstruction was done and was sent for radiological evaluation.

Erect abdomen radiograph was performed which revealed multiple dilated small bowel loops with multiple air fluid levels more so occupying the upper half of the abdomen (Fig1). Then ultrasound examination was carried out to assess the underlying cause for obstruction, which did not reveal any additional information (Fig2). Further Plain CT scan of abdomen was carried out which did not reveal any structural cause; hence diagnosis of intestinal obstruction probably secondary to Meckel's band was made. Emergency exploratory laparotomy was performed which revealed dilated small bowel loops with intraluminal obstruction about 15cm proximal to IC junction secondary to impacted foreign body (areca nut) (Fig3).



Fig 1: Multiple air fluid levels are noted suggestive of intestinal obstruction.

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Fig 2: USG image showing dilated bowel loops.



Fig 3: Arecanut specimen intra operative picture.

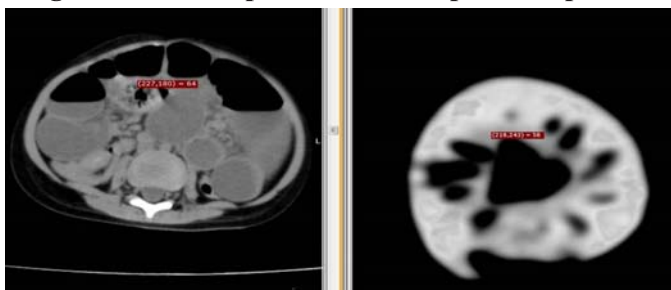


Fig 4: Retrospective analysis of CT images of arecanut specimen and abdominal CT image.

Case 2:

9 year old boy presented with history of vomiting, pain abdomen, non-passage of stools since 5 days, and abdominal distension for 1 day. There was also h/o bilious vomiting.

On clinical examination, the patient was irritable with distended abdomen and tenderness more so at the left side of the abdomen. There was no guarding/ rigidity. There was no palpable mass. Clinical diagnosis of intestinal obstruction was done and was sent for radiological evaluation.

Erect abdomen radiograph was performed which revealed multiple dilated small bowel loops occupying

the left half of the abdomen, and was suspected to be sigmoid volvulus/ internal hernia(Fig.5). Then ultrasound examination was carried out to assess the underlying cause for obstruction which revealed dilated bowel loops, but did not yield the cause for obstruction (Fig.6). On repeat ultrasound examination on the next day diagnosis was revised and Ileo-ileal intussusception was made(Fig.7). Emergency exploratory laparotomy was performed which revealed dilated bowel loops with Meckel's band at about 30cm from IC junction causing internal hernia(Fig.8).



Fig 5: Dilated small bowel loops noted involving left half of upper abdomen.



Fig 6 and 7: USG image showing dilated small bowel loops (6) and appearance of telescoping of one bowel loop into other (7).



Fig 8: Intra operative picture showing dilated bowel loops proximal to the band.

III. Discussion :

Intestinal obstruction can occur at any age in the paediatric population. The causes are different at various age groups of presentation. Beside this racial, environmental and social habits may also play a role in the etiology of intestinal obstruction in paediatric patients. Seasonal variations have also been noted with great impact on causes. It can be mechanical obstruction or functional obstruction. Mechanical obstruction being more common in paediatric age group.

In new-borns the congenital anomalies like atresia, stenosis, meconium ileus are the commonest, whereas in infant's condition like intussusception is more common. As the child grows a gamut of conditions like incarcerated hernia, Meckel's bands, post-operative adhesions, tuberculosis, inflammatory bands, mid gut volvulus, appendicitis and its complications, colonic, ileal webs, foreign body, trichobezoar, faecal impaction and ascariasis may be responsible for intestinal obstruction. Because of the serious consequences, early diagnosis and proper management is needed to avoid complications.

Most of these conditions when suspected can be diagnosed with great accuracy by using various imaging modalities like erect abdomen radiograph, barium studies, ultrasound, CT or MRI.

X-ray being the first imaging modality used, it usually adds to confirming the clinical suspicion of obstruction but does not actually give a clue to the underlying cause.

Ultrasound is the next modality which has the advantage of lack of radiation and ready availability is being the preferred the imaging modality for acute abdomen. Combined ultrasound and x ray lead to diagnosis in 90% of cases. There are few cases for which CT might

become essential and few cases for which no imaging modality can find out the underlying etiology.

Intussusception being the commonest can be easily diagnosed using ultrasonography or CT. Mid gut volvulus, appendicitis, colonic webs, ileal webs, ascariasis, tuberculosis and faecal impaction can be easily diagnosed by combination of various modalities.

There are conditions which lead to diagnostic dilemma and for which no structural cause can be found out using various imaging modalities. Such conditions include bands and adhesions as in our case where Meckel's band was not visible.

At times even foreign bodies can lead to inaccurate diagnosis if the history is not relevant and if the foreign body is non-metallic or is porous in nature. As in our case the arecanut (Foreign body) due to its porous nature it showed attenuation as that of bowel with central air containing areas.

Conclusion :

So when there are features of intestinal obstruction and no structural cause is identified differentials like bands, adhesions and non-metallic foreign needs to be thought of.

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How to Cite this article :

Bhagwat K A, Pruthvi M, Jain B M, Manjunath, Naveena P, Kumar N, Intestinal obstruction in Paediatrics ;Beyond Imaging - A case report J Pub Health Med Res, 2015;3(2):47-9.

Funding: Declared none

Conflict of interest: Declared none