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RESEARCH ARTICLE

INFECTED MECKEL'S DIVERTICULUM MASQUERADING AS SPONTANEOUS RUPTURE OF UMBILICAL GRANULOMA - A CASE REPORT IN ONE MONTH OLD INFANT

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Abstract

Meckel's Diverticulum can present as umbilical cord infection which mimicking an umblical granuloma. A 1 month, old infant had presented with herniated bowel loops, following an ultrasound procedure. The purpose of the report is to highlight on variable presentation of Meckel's Diverticulum in a suspected case of umblical granuloma.

Introduction:-

Meckel's diverticulum (MD) was first reported by Meckel (in 1809), based on its embryological evidence, after FabricusHildamus pictured it as an 'atypical ileal diverticulum' (in 1650).[1] It occurs in about 0.3-2% of the general population with a male-female ratio of 3:1, and with frequent complications in boys.[1,2] The MD is usually found within 100 cm of the ileo-caecal valve and represents a true diverticulum (all the layers of the intestinal wall).[2] The clinical symptoms arise from complications of the diverticulum such as diverticulitis, peptic ulceration (with haemorrhage), intestinal obstruction from diverticular inversion, volvulus, torsion, intussusception or inclusion of the diverticulum in a hernia, enteroliths and development of neoplastic process within the diverticulum.[1,2]

The common presentations of listed abdominal disorders may cause a diagnostic dilemma considering the overlap of clinical symptoms with other causes of acute abdominal pain. In addition to this, there is often non-specific radiological impression on cross-sectional imaging.[3,4]Also, in a1 month old infant, a persistent umbilical discharge usually rests between Meckel's Diverticulum, enterocystocele, remnant of vitelline vessel, fibrous band, an umbilical polyp or an umbilical cyst.[6]We present a clinically suspicious umblical granuloma which was found to be infected Meckel's diverticulum, diagnosed inta-operatively in a 1 month old infant. We also presented a brief note on imaging findings, differentials, treatment and prognostic outcomes.

Case report:

A one month one-day old male baby had presented to KIMS Amalapuram, aTertiary Care Medical Super Specialty Hospital, with documented referral complaint of 'protrusion of bowel loops from his umbilical region during ultrasound scanning'. The medical history revealed that the patient was treated 3 weeks ago by a local pediatrician

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for suspected umbilical cord infection/ granuloma by topical application of Mupirocin (2.15% w/w mupirocin calcium**)** and dressing. Since, the umbilical swelling did not heal for over a month. An ultrasonography (USG for abdomen and pelvis) was advised by the same pediatrician. A possible evulsion of the small intestine contents from the umbilicus during USG was documented, before referral to our Neonatal Emergency Department.The family/ drug /obstetric and other history were non-contributory. On examination, heart rates of 90 beats per minute and respiratory rate of 18 breaths per minute with normal assaulted heart sound were noted. The local examination showed an erythematous mucosa with active bleeding at the site of umbilius. The bowel loops were found at the site, congested and with pre-gangrenous changes. There was no sac covering the bowel loops, ruling out the strangulated hernia (Figure 1a).The investigations showed hemoglobin of 9.8gm/dl, total leucocyte count of 11,280 cells/cumm with remarkable values of serum glucose, Serum electrolytes, and liver/ kidney function tests.The patient was provisionally diagnosed with spontaneous eviseration of Meckels diverticulum through umbilicus keeping omphalocele minor and umbilical polyp as differential diagnoses. Also, informed consent was obtained for a Laparotomy. Patient was administered preoperative parentral ceftriaxone at a dose of 50mg/Kg body weigh 12th hourly. Patient was premeditated with injection of 6mg Ketamine and 1.5mg loading of atracurium and maintained under 0.4% w/v inhalational sevotwrane based anesthesia.

A right transverse incision was given from existing umbilical defect. The intra-operative findings were perforated tip of MD with congested small intestine and mild adhesions between intestines. The bowel loops were washed with normal saline and no other complications/ gangrenous changes were noted (Figure 1b).The MDalong (with 4cm of small intestine on both the sides) was resected and end-to-end anastomosis was done in 4 layers using 5-0 vicryl sutures, followed by placement of corrugated rubber drain (Figure 1c). The umbilical reconstruction (method used: purse string subcuticular stitch to lienaalba) was performed as per indication.The skin defect was closed in subcuticular sutures with 2-0 vicryl. The removed specimen was sent for histopathology examination seen (Figure 1d).Post-operatively, the patient was on parenteral medication i.e. ceftriaxone 50mg/kg wt twice daily, injection paracetamol 15mg/kg wt and ranitidine 2mg/kg wt every two hourly along with diluted normal saline 12 ml/hour. There were no immediate complications following surgery. A upper gastrointestinal contrast study (done on 5thpost-operative day) showed no anastomotic leaks(Figure 5). Thus, patient was started on oral liquids. The drain was removed and the patient was discharged on day 10 of the surgery with no futher complications. The patient was followed up on 1, 2 and 6 months, andfound to have a healed surgical scar, and no late complications. The histopathology of resected specimen demonstrated diverticulum intestinal lining mucosa and small foci of hemorrhagewithout any necrosis in the submucosalmuscularispropria (Figure 1e and 1f).

Discussion:-

In the present case, the USG procedure to diagnose an umbilical swelling led to rupturing/ herniation of bowel loops. The predisposing factor was misdiagnosed MD protruding through umbilicus treated as umbilical granuloma.The emergency intra operative laparotomy revealed a perforated tip of MD with infection.

The MD communicates with the intestine through a rather wide opening. The contents are liquid and the complete muscular coat enables the diverticulum to empty simultaneously with the iIeum. This reason why inflammation of MD is not as frequent as that of the appendix, is difficulty to visualize MD on routine radiographs.[1]In addition, MD can contain ectopic gastric or pancreatic cells in 33%-50% of symptomatic cases, which may contribute to chronic inflammation of the blind-ending pouch, causing ulceration and perforation.[5] A case series had reviewed symptomatic cases of MD and, had reported that abdominal pain, bloody stool or vomiting were commonly reported.[5] However in current case, MD presented as spontaneous eviseration through umbilicus, which was not previously reported.

A recent systematic review had reported that, in case of pediatric symptomatic patients, 46.7% have obstruction, 25.3% have hemorrhage, and 19.5% have inflammation as presenting symptom for MD. The ectopic gastric tissue is present in 24.2% to 71.0% of symptomatic MD, and was associated with hemorrhage followed by ectopic pancreatic tissue. [6] The clinical findings, past history and surgical exploration are ideal for infants of the given age and diagnosed condition. The imaging is of minimal value as oopsed to surgical exploration. The USG may show a fluid-filled structure with thick-walled loop of bowel.[2] In the present scenario, USG had led to complication, so was omitted. The Computed tomography (CT) abdomen is mostly contradictions owing to radiation dose for that age. Also, the imaging is not useful to differentiate MD from normal boweltissue.[4] The pathologies namely acute appendicitis, cholelithiasis, intussusception, sigmoid diverticulitis, acute salpingitis, primary

pneumococcicperitonitis, littre's hernia with obstruction, perforation of ileum and torsion or strangulation of small bowel mimic the MD.[7]

The diagnosis in infants or neonates is mostly intraoperative as in our case. However, an early age prophylactic removal is indicated considering risk of malignant transformation and future infections.[5]In patients with a sessile or short perforated MD, however, small bowel resection and anastomosis may be considered a more appropriate procedural alternative.[5] In the current case, the laparotomy was both diagnostic tool and surgical treatment option with successful result. This case highlights the importance untreated umbilicus infections, and that an infected MD could masquerade under an umbilical granuloma, which in turn may rupture causing eviseration of bowel.

Conclusion:-

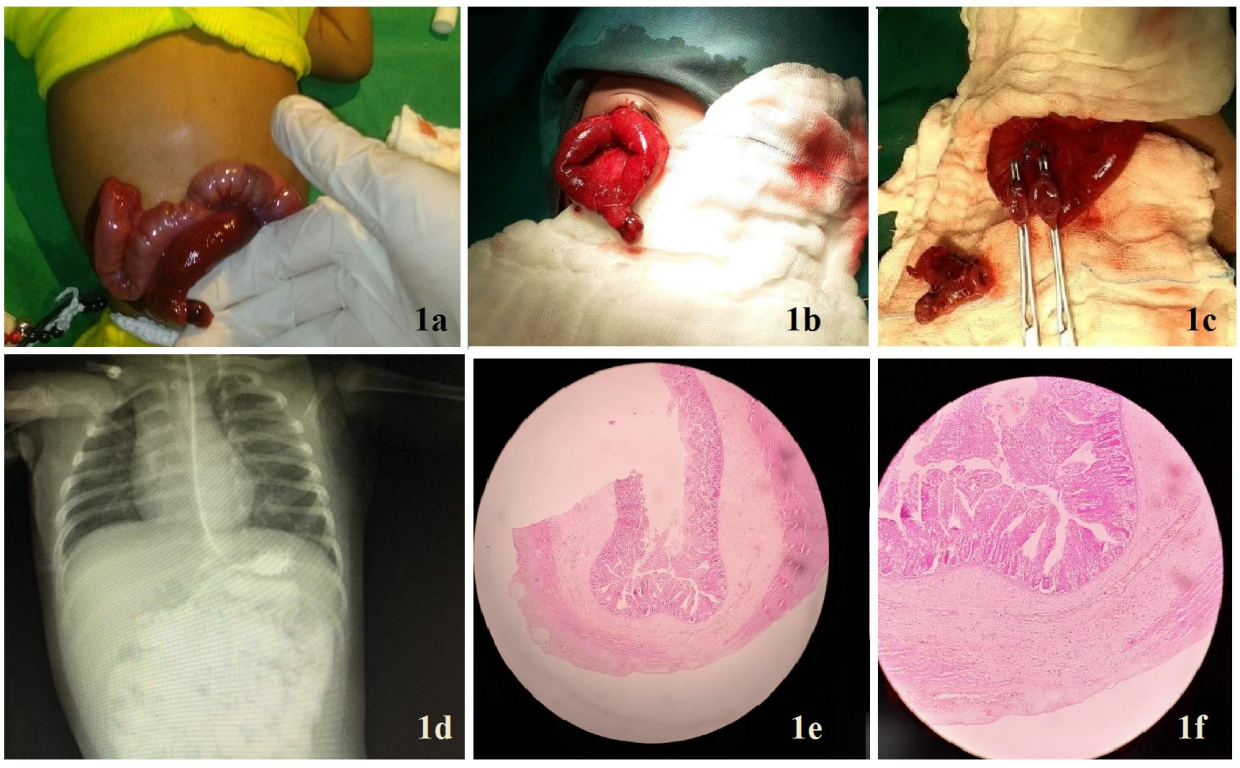
The infection of a MD presenting as umbilical granuloma is a rare entity in a 1 moth old infant. A high index of clinical suspicion must be maintained towards the possibility of complicated MD, in cases of acute abdomen, more so, when other abdominal pathologies have been excluded. A prompt diagnosis and quick planned surgical intervention, may aid in saving such cases.

Acknowledgements:-

Nil.

Figures Legends:

Figure 1a: Initial clinical presenation with evserated bowel form the umbilcical region.
Figure 1b: Intraoperative image showing congested Meckel'sdivertcilum with perforation of its tip and remnants of umbilical sac
Figure 1c:: Immediate postopertaive image showing reconstructed umbilius.
Figure 1d: The post opertaive contrast imaging study showing no leaks and successful surgical reconstruction.
Figure 1e-1f : Histopathology of resected specimen (10X and 40X under H & E staining) shwoing typical featues of Meckel'sdivertcilum with intestinal lining and foci of blood vessels in lamina propria.



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