Gastro colic fistula in a neonate — Case report of a rare complication of necrotizing enterocolitis

Shilpa Kalane*, Pradeep Suryawanshi, Umesh Vaidya, Shashank Shrotriya

Division of Neonatology, Department of Pediatrics, Sahyadri Speciality Hospital, Nagar Road, Pune, Maharashtra, India

A R T I C L E   I N F O

Article history:
Received 19 September 2014
Received in revised form 2 November 2014
Accepted 4 November 2014

Key words:
Gastro colic fistula
NEC
Neonate

A B S T R A C T

Gastrocolic Fistula is, in the majority of cases the pathological communication between stomach and transverse colon. It occurs mostly in adults, but they can be present in infants, as well, as a result of congenital abnormalities or iatrogenic procedures (i.e. migration of naso gastric tube that placed before). We report a case of 10 days old full term, male neonate, was on naso gastric tube feeds, had clinical features of necrotizing enterocolitis (NEC), diagnosed to have gastrocolic fistula on barium enema study and confirmed on CT abdomen. Intraoperatively, baby had multiple perforations with gastrocolic fistula. Histopathological examination was suggestive of NEC. We searched literature, we could find seven case reports.

© 2015 The Authors. Published by Elsevier Inc. All rights reserved.

1. Case report

A male neonate, born by full term emergency caesarian section to a primigravida mother for meconium stained amniotic fluid, was limp at birth, had meconium aspiration syndrome and hence was referred to us for further management. Baby was small for gestational age with weight was 1800 g, Head circumference 34 cm, and total length at birth was 49 cm. Baby was ventilated for 3 days for moderate meconium aspiration syndrome. Trophic feeds via naso gastric tube were initiated on day 1 of life, baby reached full feeds (180 ml/kg/day, expressed breast milk) on day 6, feeds were started. On day 21 of life, baby was on exclusive breast feeding, discharged on day 24 of life with discharge weight 1990 g.

2. Discussion

In children, gastro colic fistulae are very rare, especially in newborns and infants. Since 1945, only 8 cases have been reported in the literature [1]. Gastro colic fistulae result from perforation of the stomach into the colon or of the opposite, mostly among premature and immature small-for-dates infants [2]. This occurs because of stress ulcer, gastric tissue ischemia or trauma, due to complications of necrotizing enterocolitis, Hirschsprung’s disease and meconium ileus, respectively. Also, gastro colic fistulae in children can occur after migration or placement of PEG feeding tubes [2].

Strictures complicating NEC occur in 20% of patients and usually involve colon [3]. In contrast fistula formation complicating NEC is rare and may occur with or without stricture. Clinical data on our one patient and the 8 previously described in literature are summarized in Table 1.

The plain film findings in the presence of fistula are nonspecific. Clinically our patient presented with increasing aspirates without...
abdominal distention and previously reported cases presented with diarrhea and abdominal distention. Clinical symptoms suggestive of feeding intolerance and nonspecific bowel gas pattern on plain x ray should raise the possibility of an existing fistula. Several mechanisms may be proposed for the development of enterocolic fistula following NEC. Severe colonic ischemia and subsequent bowel necrosis may develop over time inciting an inflammatory response. Continuous inflammation may result in adherence of affected segment of colon to adjacent bowel and eventual fistulization. Alternatively, a sub acute perforation may be walled off by adjacent viscera resulting in fistula formation. In cases mentioned in literature, time gap between diagnosis of NEC and fistula formation was wide around 2 weeks—10 weeks. However in our case it was early. In this case baby was IUGR, had suffered asphyxia and had MAS. This may have aggravated intestinal ischemia, leading to early postnatal fistula formation. Alternatively as mentioned earlier sub acute perforation may be walled off by adjacent viscera resulting in fistula formation. As mentioned in most of the reported cases, present case also did well postoperatively.

Gastro colic fistulae, a condition with poor prognosis, can arise from a variety of pathological processes, spontaneous or iatrogenic, and the classical symptoms are increasing aspirates, abdominal distention, vomiting and diarrhea. The best diagnostic method is

Fig. 1. Supine abdominal X ray with Barium enema study. (a–d) X rays show dye slowly advancing from rectum, sigmoid (a), descending colon to stomach suggestive of gastro colic fistula (b) then to the rest of the intestine (c and d).

Fig. 2. CT scan abdomen suggestive of gastro colic fistula.
the barium enema, while other radiological methods play a sig-
nificant role to other parameters of the fistulae. The therapy of this
condition remains surgical. After all, we must emphasize that it is a
serious pathologic condition that can lead to death.

Contributions

Kalane S: search of the literature, partial English editing, and
correction, Suryawanshi P: editing, Vaidya U: Final editing and
correction, Shrotriya S: editorship of the manuscript.

Conflicts of interests

None.

Sources of funding

None.

References

[1] Levin TL, Brill PW, Winchester P. Enteric fistula formation secondary to necro-
[3] Caffey's pediatric x-ray diagnosis. 8th ed. Chicago: Year Book Medical Pub-
Lancet 1948;II:53.
[5] Firor HV. Gastrojejunocolic fistula in an infant: a previously unrecorded etiol-
[8] Paley RH, McCarten KM, Clevand RH. Enterocolonic fistula as a late complica-
[9] Kiely E, Eckstein HB. Colonic stricture and enterocolonic fistulae following necro-

Table 1
Cases of enteric fistulas due to necrotizing enterocolitis.

<table>
<thead>
<tr>
<th>Author</th>
<th>Diagnosis of NEC (age)</th>
<th>Diagnosis of fistula (age)</th>
<th>Birth weight (g)</th>
<th>Fistula location</th>
<th>Colonic stricture</th>
<th>Clinical presentation</th>
<th>Follow up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pein [4]</td>
<td>7 days</td>
<td>35 days</td>
<td>?</td>
<td>Gastro colic</td>
<td>No</td>
<td>Vomiting, diarrhea</td>
<td>Died post surgery</td>
</tr>
<tr>
<td>Beck [6]</td>
<td>5 days</td>
<td>18 weeks</td>
<td>2610</td>
<td>Ileocolic</td>
<td>Yes</td>
<td>Distention, constipation</td>
<td>Surgery, did well</td>
</tr>
<tr>
<td>Paley [8]</td>
<td>7 days</td>
<td>63 days</td>
<td>3800</td>
<td>Jejunocolic</td>
<td>Yes</td>
<td>Distention, vomiting</td>
<td>Surgery, did well</td>
</tr>
<tr>
<td>Kiely [9]</td>
<td>5 days</td>
<td>32 days</td>
<td>3600</td>
<td>Jejunoileocolic</td>
<td>Yes</td>
<td>Vomiting, diarrhea</td>
<td>Surgery, did well</td>
</tr>
<tr>
<td>Levin [1]</td>
<td>6 days</td>
<td>25 days</td>
<td>820</td>
<td>Jejunocolic</td>
<td>No</td>
<td>Distention</td>
<td>Died pre surgery</td>
</tr>
<tr>
<td>Levin [1]</td>
<td>22 days</td>
<td>43 days</td>
<td>1150</td>
<td>Jejunoileocolic</td>
<td>No</td>
<td>Distention</td>
<td>Surgery, did well</td>
</tr>
<tr>
<td>Case</td>
<td>8 days</td>
<td>10 days</td>
<td>1980</td>
<td>Gastro colic</td>
<td>No</td>
<td>Increasing bilious aspirates</td>
<td>Surgery, did well</td>
</tr>
</tbody>
</table>

Fig. 3. Small intestinal perforations (a-e) with gastro colic fistula.