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Case Reports

Meckel's Diverticulum: Case Report

Tariq Mahmood, Waqar Hussain, Sajid Maqbool
Department of Paediatrics, Shaikh Zayed Medical Complex, Lahore

INTRODUCTION

In the first 2 years of life, anal fissures are the most common cause of lower GI bleeding and usually are associated with hard stools or constipation. Other causes include infectious colitis, juvenile polyps, intussusception, mid gut volvulus, Meckel's diverticulum, pseudomembranous colitis, and angiodysplasia. Meckel's diverticulum should be suspected in an infant or young child who passes bright or dark red blood through the rectum. Severe lower GI bleeding leading to haemodynamic instability or requiring transfusion is rare, and Meckel's diverticulum is a common etiology of severe lower GI bleeding. Here we present a case report of Meckel's diverticulum.

CASE REPORT

Eighteen month old male child presented with bleeding per rectum, twice during last 10 days, and pallor for 1 day. His first episode of bleeding per rectum occurred 10 days back, following defaecation. Blood was fresh, brick red in color and was painless. Over the next few days he had no such problem, except on the day of hospitalization, and this time again bleeding was painless, followed defaecation, but was large in amount. Parents noticed that child became pale after this episode. Mother also complained of low grade fever, cough and coryza over the last 2-3 days. He always had normal appetite, without any history of abdominal pain and had normal bowel habits with normal stools. He had no hematemesis, epistaxis or bruises, and had not taken any drug.

Family history was insignificant and his growth and development appropriate. His nutritional history revealed that his diet consisted of milk mainly, while solid intake had been comparatively poor.

On examination he was severely pale, restless and irritable, with temperature 99°F, pulse 130/min BP 96/68 and respiration 26/min. His abdomen was soft with no visceromegaly, and bowel sounds were normal. His perianal area was normal and no anal fissure was visible. Rectal examin did not demonstrate any blood, and no rectal polyp was felt.

On the basis of history and physical examination a differential diagnosis of juvenile polyp and Meckel's Diverticulum was considered.

His initial CBC revealed Hb of 3.0 gm/dl, TLC 13,000/cumm, platelet count 390,000/cumm. Prothrombin time and APTT were normal. After giving packed cell transfusion, flexible sigmoidoscopy was done, which was normal. No polyp was seen upto distal transverse colon. Technetium 99 scan for Meckel's diverticulum revealed an area of abnormal tracer uptake in the right upper quadrant along the inferior border of liver. It was visualized at 5 minutes of study and persisted through out the study period of 1 hour.

The child underwent surgery and Meckel's diverticulum was found 30-35 cm from the ileocecal junction. Diverticulectomy was done along with appendicectomy. His post operative recovery was uneventful. Histopathology report confirmed the presence of gastric body type mucosa and partly small and large bowel mucosa. A focus of ulceration was seen.

MECKEL'S DIVERTICULUM

Meckel's diverticulum is a remnant of the embryonic yolk sac[1]. Incomplete degeneration of the vitelline duct is responsible for several anomalous conditions, of which Meckel's diverticulum is the most common and significant. It was first described by Johnan Friedrich Meckel in 1809[2] and occurs approximately in 2% of population[1,3]. It is generally believed that less then 5% of them become symptomatic and the chance decreases with increasing age[3,4]. It arises from the antimesenteric border of the ileum. In infants the maximal distance is 40 cm from the ileocecal junction, but in adults may be upto 130 cm.[5] It is a blind loop of 5 cm in length (range 1-11 cm) with diameter of 2 cm, certainly greater than that of appendix. A fibrous cord may attach it to the posterior aspect of umbilicus, and it rarely may

have a fistulous tract[2]. Its blood supply is derived from primitive vitelline artery, arising from ileal branch of superior mesenteric artery or sometimes from ileocolic artery. It is a true diverticulum, having all 3 layers of the intestinal wall. Mucosal lining may be similar to that of adjacent ileum but in 50% of cases heterotopic tissue is found, and out of these in 62%, it is gastric tissue, remainder include pancreatic, duodenal, jejunal, colonic and even biliary tissue. An Indian study of 29 cases who had resection of Meckel's diverticulum revealed an incidence of 6.8% of heterotopic gastric mucosa in their population, and had concluded that presence of heterotopic gastric mucosa is unlikely to be associated with complications of Meckel's diverticulum[6]. A study from Netherlands conclude that symptoms in Meckel's diverticulum are mainly due to the presence of bands or ectopic gastric tissue[7]. The frequency of complications varies and the approximation derived from 6 series comprising of 830 cases reveals, bleeding in 32%, intestinal obstruction in 35%, inflammation (diverticulitis) in 22%, umbilical fistula in 10% and miscellaneous (tumours, hernias) in 1%[3]. Interestingly complications are more common in males[2].

Most Meckel's diverticulum are clinically silent and are incidentally discovered. Most common manifestation in children is painless lower gastrointestinal bleeding, and in adults as an inflammatory process (diverticulitis)[3,4]. In a study of Peru the age group less then 2 year old presented with more complicated cases and intestinal obstruction was most common, while lower gastrointestinal bleeding was the second common complication[8]. Blood varies in amount and appearance, but is usually fairly copious, and brick colored[1,2]. Its appearance varies with the rate of bleeding and transit time in gut[3]. Chronic blood loss from Meckel's diverticulum may occur leading to iron deficiency anemia but is rare[2,3]. Meckel's diverticulum can cause intestinal obstruction by producing intussusception, herniation, kinking or volvulus[3].

The abdominal pain because of acute Meckel's diverticulitis is almost indistinguishable from that of acute appendicitis, except that the pain tends to be localized around and below the umbilicus[2]. "Dyspepsic Meckel's" has been described as a bout of abdominal pain occurring after 15-30 minutes of meals and subsiding after an hour when food has reached the ileum[9].

Neoplasm within Meckel's diverticulum account for 1% of complications, and common ones are leiomyomas, angiomas, lipomas, carcinoids or adenocarcinoma[9].

DIAGNOSIS

Despite the availability and wide use of modern imaging techniques, the diagnosis of Meckel's diverticulum is difficult. Yamaguchi et al found only 6% of 600 patients had Meckel's diverticulum diagnosed preoperatively[5]. In children the single most accurate diagnostic test is scintigraphy with sodium 99m TC- pertechnuate, which has the advantage of being non-invasive. In adults however this test is less accurate[9].

Sodium 99m TC-pertechnuate is taken up by the mucus secreting cells of gastric mucosa and ectopic gastric tissue in diverticulum. Sfakianakis and Conway reviewed the results of 917 patients nearly all children with Meckel's diverticulum and calculated a diagnostic sensitivity of 85%, specificity of 95% and accuracy of 90% for scintigraphy. However this sensitivity decreases to 63% and accuracy to 46% in adults. Sensitivity and specificity of scintigraphy can be improved by the use of pentagastrin, although this is not commonly used because of the potential to increases the risk of inducing peptic ulcer[9]. Cimetidine may be used to increase the sensitivity of scintigraphy. This H2 receptor antagonist decreases the peptic secretion but not the radionucleotide uptake and furthermore retards the release of pertechnuate from mucoid cells into the diverticular lumen, resulting in higher radionuclide concentration in the wall of the diverticulum. Cimetidine increases the sensitivity of test to 90-95%[10].

In case of hemorrhage, 99m TC sulfur colloid or 99m TC labelled autologus RBC can be used, and the deposition of radionuclide in sites that are typical for a Meckel's diverticulum is consistent with a bleeding diverticulum[9].

In patients with meckel's diverticulum arteriography is indicated when there is active bleeding in the gastrointestinal tract or the episodes of self limiting bleeding after scintigraphy show normal findings. Visualization of an anomalous artery feeding the diverticulum, and extravasation of contrast media or presence of dense capillary staining (due to rich capillary network then the ileal mucosa) is suggestive of diagnosis[9].

Barium studies, sonography and CT scan are of little value in diagnosis of Meckel's diverticulum.

Treatment of a complicated Meckel's diverticulum is excision. If the adjacent ileum is affected by a complicating lesion such as peptic ulceration, inflammation, or strangulation it should be removed with the diverticulum.[2,3] Most surgeons agree that if Meckel's diverticulum is encountered as an incidental finding at laparotomy, it should be removed, provided the nature of primary lesion and the condition of the patient permits further surgery[2,3].

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The Authors:

Tariq Mahmood,
Trainee Registrar,
Department of Paediatrics,
Shaikh Zayed Medical Complex,
Lahore

Waqar Hussain,
Associate Professor,
Department of Paediatrics,
Shaikh Zayed Medical Complex,
Lahore

Sajid Maqbool
Professor & Head of
Department of Paediatrics,
Shaikh Zayed Medical Complex,
Lahore

Address for Correspondence:

Sajid Maqbool
Professor & Head of
Department of Paediatrics,
Shaikh Zayed Medical Complex,
Lahore