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Case Report

Perforated Meckel's Diverticulum Mimicking Acute Appendicitis in an Adult Female - A Case Report

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Abstract

We describe a case of a 30 year old female patient presented with a one day history of right lower abdominal pain with ultrasound evidence of free peritoneal fluid. Radiologically it was suspected to have perforated appendix. Ultimately perforated Merkel's diverticulum was diagnosed at the laparotomy. Purpose of this article is to emphasize that perforated Merkel's diverticulum can occur in adults and should be considered as a differential diagnosis in patient with right iliac fossa pain and tenderness

Keywords: Merckl's diverticulum; Perforation; Appendicitis

Introduction

Merkel's diverticulum is the most common anomaly among the gastrointestinal tract. Its complication has an extensive variation of clinical manifestation extending from benign to life threatening conditions. One of the rare complications of Merkel's diverticulum is spontaneous perforations which often mimic acute appendicitis. Hence is diagnosis is challenging.

Case Presentation

A known diabetic mellitus, 38 year old female patient presented to our surgical casualty with a one day history of sudden onset of right lower abdominal non radiating pain. She had no fever no vomiting. She denied significant bowel or urinary symptoms. Her last menstrual period was 4 days back. Abdominal examination reveal tender lower abdomen with signs of peritonitis which was more pronounced on the right side. The patient was not pale. Other than tachycardia (pulse rate-110 per minute) no significant abnormalities found in other systems. The urine HCG done was negative. C reactive protein and white blood cell count were slightly elevated (WBC-10.37, CRP-11.4). The abdominal x-ray did not reveal any significant abnormalities except very small jejunal loops. The ultra sound done showed significant amount of echogenic free fluid in the pelvis and in between bowel loops. The suspicion was perforated appendix. CT scan was not done as the facility was not available.

Considering the absence of pallor, negative HCG and recent regular menstrual period ectopic pregnancy was considered unlikely. However Obstetrician was kept informed. Presence of significant amount of echogenic fluid with a one day history, perforated appendix was a remote possibility though the radiologist suggested. Hence it was decided to proceed with laparotomy having doubt of some kind of gastro intestinal perforation. At the laparotomy it was noted that free bowel content in the abdomen with perforated Merkel's diverticulum (Figure 1). Perforation was seen in the tip of the Merkel's diverticulum (Figure 2). The rest of the intra-abdominal organs were unremarkable. The Merkel's diverticulum was resected and routine abdominal closure was done with a close drain. Post-surgical period was uncomplicated. Here blood sugar was quite under control. Patient was discharged on 6th post-operative day. Histology of the specimen confirmed Merkel's diverticulum. It has shown the features of all layers of intestinal wall. It was predominantly lined by small intestinal type mucosa and ectopic gastric mucosa (Figure 3). Gastric mucosa was fundic and body type and contained oxyntic glands. Patchy collection of Brunner's glands of duodenum and pancreatic tissue (Figure 4) also present. Ulceration of the mucosa and suppurative inflammation of the wall were present focally.

Discussion

Merkel's diverticulum occurs due to the failure of complete obliteration of omphalomesenteric duct during the fetal life. It is described in 1809 by Aponymous anatomist [1]. Being the most common congenital anomalies in the gastrointestinal tract, it represents about 2% of the population with three time greater male predominance. The majority of Merkel's diverticulum remains silent during the entire life and discovered incidentally during surgery or investigation done for other events [3]. About 16% of Merkel's diverticulum lead to complication [4] which include gastrointestinal bleeding, intussusception, inflammation, pain and rarely perforation. Bleeding is the commonest case especially in children [5]. The estimated life time risk for developing complication of Merkel's diverticulum is ranging from 4% to 6.4 % [6]. Majority of complications occur in between 4 to 5 years of age. A second peak has been reported 7 to 16 years of age [7]. The perforation is rarely seen and was reported as been responsible for about 0.5% of symptomatic

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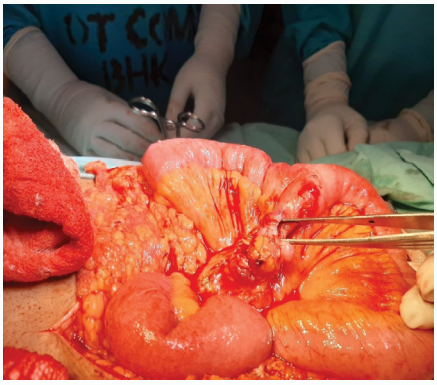

Figure 1: Perforation at the surgery.

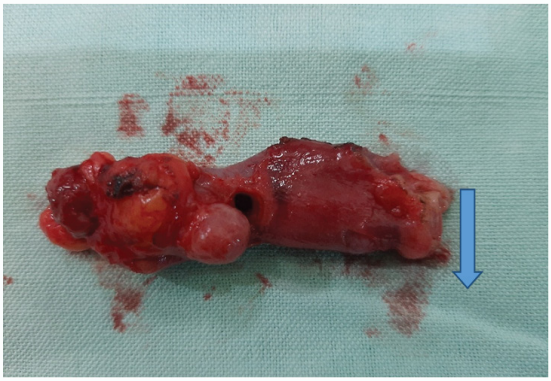

Figure 2: Resected merkel's diverticulum.

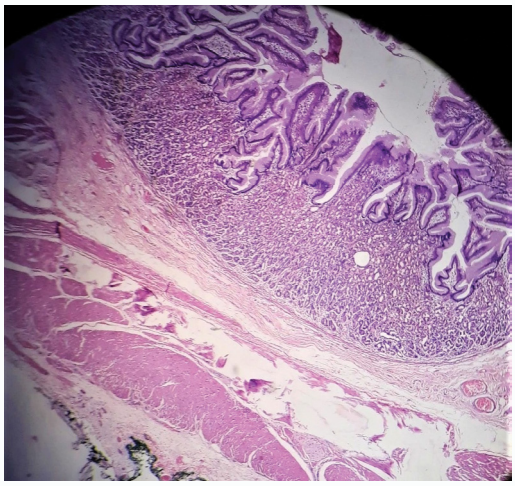

Figure 3: Microscopic appearance of gastric mucosa of the merkel's diverticulum.

Merkel's diverticulum [8]. The incidence of complication related to Merkel's diverticulum decline with age.

The Merkel's diverticulum perforation is a serious complication. This usually occurs secondary to gangrene, peptic ulcer due to ectopic gastric mucosa and tumor such as leiomyosarcoma, lymphoma, poorly differentiated stromal tumor [9]. Perforation of Merkel's diverticulum due to foreign body has been reported in 8% of all complicated Merkel's diverticulum [10]. Accurate preoperative

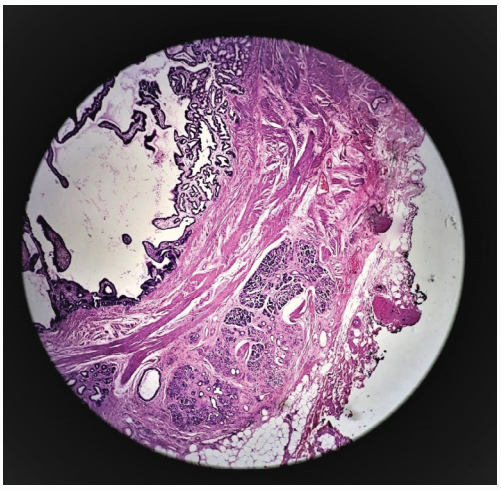

Figure 4: Microscopic appearance of pancreatic mucosa of the merkel's diverticulum.

diagnosis of symptomatic Merkel's diverticulum is challenging. In a best equipped center complication of Merkel's diverticulum may be correctly diagnosed in less than 10% of cases. Most often it is misinterpreted as acute appendicitis [11]. In another study it has been shown that perforated Merkel's diverticulum has been found and 60% of them were misdiagnosed as perforated appendix preoperatively [12]. This would be due to the fact that Merkel's diverticulum is often symptomatically indistinguishable from appendicitis as the inflammatory process around the cecal area exhibit symptoms or signs that are more or less similar. Radiological diagnose of Merkel's diverticulum is difficult especially when the diagnosis is not initially suspected. Freely available ultra sound scan is of limited value in diagnosis of Merkel's diverticulum except in intra saception [13]. Merkel's diverticulum is usually indistinguishable from normal bowel loops on CT scans. However in case of diverticulitis other inflammatory process and perforation identifiable feature could be noted [14]. Even though unless high degree suspicions of Merkel's diverticulum is not there the diagnosis might miss as such a finding can resemble other cause of inflammatory condition around (eg- perforated appendix). Radionuclide scan (technetium-99) is generally more promising imaging modality for Merkel's diverticulum with sensitivity and specificity of 97% and 94% respectively in paediatric population. But is a drop to 46% in adults [15]. The main reason for that negativity is that absence of gastric mucosa which takes up radionuclei. With these limitations, preoperative diagnosis of Merkel's diverticulum is very difficult and majority will diagnosed in surgery as in our case. Based on clinical evidence (peritonitis signs) and ultra sound findings of echogenic free fluid in the abdomen we thought that it was some kind of bowel perforation and proceeded with laparotomy. The moderate amount of echogenic fluid on ultrasound scan helped us to stand on the decision of laparotomy.

Conclusion

This case demonstrates that high degree of suspicion of complication of Merkel's diverticulum should be present in diagnosis of patient with right lower abdominal pain and tenderness especially when clinical and radiological findings are in doubt.

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