RED UMBILICUS AS A CLINICAL MANIFESTATION IN A 19-MONTH-OLD GIRL WITH TYPHOID COLONIC PERFORATION

Yu-Tang Chang and Jan-You Lin
Division of Pediatric Surgery, Department of Surgery, Kaohsiung Medical University Hospital, and Department of Surgery, Faculty of Medicine, College of Medicine, Kaohsiung Medical University, Kaohsiung, Taiwan.

Redness of the umbilicus is usually considered to be a reliable sign of underlying gangrenous bowel or peritonitis in tiny infants but seldom among non-neonatal patients. We report a 19-month-old girl with final diagnosis of typhoid colonic perforation who initially presented with abdominal distention and umbilical erythema on arrival at our emergency department. The redness of umbilicus diminished gradually after laparotomy. Thin abdominal wall, severe intra-abdominal soiling, and polymicrobial infection accounted for the inflammatory process spreading to the skin of the umbilicus. Because of its rarity beyond the neonatal period, prompt diagnosis depends on maintaining a high index of suspicion when the abdomen is distended and suddenly tender to palpation.

Key Words: children, colonic perforation, peritonitis, typhoid fever, umbilicus

(Erythema of umbilical skin, called red umbilicus, is usually caused by omphalitis, infected urachal anomaly, and infected umbilical alimentary anomaly [1]. In infants, redness of umbilicus or edema of the abdominal wall is sometimes caused by underlying gangrenous bowel and bacterial peritonitis, such as deterioration of necrotizing enterocolitis [2]. The red umbilicus caused by intraperitoneal infection is seldom reported among non-neonatal patients.

CASE PRESENTATION

A previously healthy 19-month-old girl presented with initial unremitting high-grade fever and subsequent diarrhea for 4 days. After the diarrhea began to subside, a sudden increase in complaints about abdominal distention and tenderness was reported. On arrival at our emergency department, the periumbilical area was abnormal in its appearance (Figure 1). Erythema was

Figure 1. Red umbilicus and distended abdomen. Erythema was centralized within the umbilicus.
Red umbilicus and peritonitis

Kaohsiung J Med Sci February 2007 • Vol 23 • No 2

81

centralized within the umbilicus and extended 1.5 cm about the entire umbilicus. Neither protruding mass nor purulent discharge was found from the umbilicus. In addition, severe abdominal distention and diffuse peritoneal signs were noted.

Laboratory studies included white blood cell (WBC) count 14,020/mm³ with 33% atypical band forms, hemoglobin 9.5 g/dL, platelet 420 × 10³/mm³, ALT 14 IU, AST 38 IU, and C-reactive protein 278.5 mg/dL. An abdominal radiograph taken in the supine position revealed small-bowel obstruction and pneumoperitoneum. Exploratory celiotomy was performed immediately under the diagnosis of hollow-viscus perforation.

Intraoperative findings were generalized intra-abdominal soiling and multiple perforations over the cecum and ascending colon. The appendix and terminal ileum were intact (Figure 2). She was managed by right hemicolectomy and ileocolostomy. The terminal ileum was brought out as a protective loop ileostomy.

Postoperatively, the redness of the umbilicus diminished gradually. Widal agglutination test performed preoperatively revealed titer greater than 1:160. Histo-pathology of the resected colon showed ulcerative colonic mucosa with transmural inflammatory infiltrates and fresh hemorrhage. Intra-abdominal culture during operation yielded enterococcus and Stenotrophomonas maltophilia. The diagnosis of typhoid colonic perforation was based on the clinical picture, Widal agglutination test, and operative findings. Perioperatively, the child was treated with broad-spectrum intravenous antibiotics due to intra-abdominal soiling and typhoid fever. Total parenteral nutrition was instituted via a central venous catheter until normal bowel movement fully recovered. She had some postoperative complications, including stress ulcer, anemia, and wound infection. All these complications were managed medically. The second operation to restore intestinal continuity was performed 2 months later.

DISCUSSION

In infants, redness of the umbilicus or edema of the abdominal wall may be considered to be a reliable sign of underlying gangrenous bowel and bacterial peritonitis. The inflammatory process spreads upward along the subcutaneous fascial plane to infiltrate the skin of the umbilicus. If erythema or edema of the abdominal wall progresses, severe complications such as abdominal wall necrotizing fasciitis with a high morbidity and mortality might occur [3–6]. In the neonatal period, deterioration of necrotizing enterocolitis is the most common etiology of peritonitis with abdominal wall erythema [2]. Intrapertioneal rupture of an infected urachal cyst has been reported as the cause of red umbilicus and peritonitis in children [7–10]. However, red umbilicus caused by intraperitoneal lesion is seldom reported among non-neonatal patients. In our case, a leptosomatic Asian with thin abdominal wall, diffuse intra-abdominal soiling, and polymicrobial infection accounted for the inflammatory process easily spreading to the skin of the umbilicus. To our knowledge, this unusual presentation of red umbilicus caused by acute peritonitis in early childhood has rarely been reported.

The reported incidence of intestinal perforation is 0.5–3% of typhoid fever cases [11]. It occurs mostly in the terminal ileum [12,13]; however, typhoid perforations in children involving the cecum or colon have also been reported, and the literature is mainly restricted to case reports [5,14,15]. Kaohsiung Medical University Hospital, which is located in a city with a population of 1.4 million people and counties of another 2.4 million, has encountered two to three cases per year since 1995 [16].

In addition to the lesion above the peritoneum such as omphalitis, infected urachal anomaly, and infected umbilical alimentary anomaly, red umbilicus may be an ominous sign of severe intra-abdominal inflammation in young children. If the underlying disorder is left untreated or unrecognized, red umbilicus developing

Figure 2. Multiple perforations over the cecum and ascending colon.
into such severe conditions as necrotizing fasciitis is not impossible. Because of its rarity beyond the neonatal period, early recognition of the underlying disorder depends on maintaining a high index of suspicion when the abdomen suddenly becomes distended and tender to palpation. The redness of the umbilicus should gradually diminish when the underlying disorder is promptly managed with antibiotics, surgical intervention, and intensive care.

REFERENCES

一位十九個月大女童的沙門氏菌結腸炎
穿孔以肚臍發紅為臨床表現

張鈺堂 林釗佑
高雄醫學大學附設醫院 外科部 小兒外科

嬰兒時期肚臍處出現紅斑可能是腹膜炎的皮膚表現，但在其他年紀的孩童，腹膜炎合併肚臍發紅卻不常出現。我們提出一 19 個月大的女童，因沙門氏菌腸炎導致大腸穿孔，其最初至本院的臨床表現為腹脹和肚臍發紅。肚臍發紅的情況在剖腹手術後逐漸消失。我們認為嚴重的腹腔內感染和幼童腹壁薄弱，導致發炎反應易擴散至肚臍，是造成肚臍發紅的原因。由於這樣的表現很少出現在非嬰兒時期的孩童，因此提出此病例，以供日後診斷時參考。

關鍵詞：孩童，大腸穿孔，腹膜炎，傷寒熱，肚臍

(高雄醫誌 2007;23:80－3)