Successfully treated stump appendicitis diagnosed by CT and ultrasonography

Hossein Salehi · Seyed Hadi Anjamrooz

Received: 13 July 2007 / Accepted: 4 March 2008

Abstract Although rare, inflammation of the appendiceal stump can occur and is still an important clinical entity. There has been a recent increase in interest in stump appendicitis. In this study a case of right lower quadrant pain in an 18-year-old man who underwent an appendicectomy 7 months previously is presented. Recurrent appendicitis was noted in an appendiceal stump during surgery which previously diagnosed by CT and ultrasonography.

Key words Stump appendicitis · CT · Ultrasonography

Introduction

Acute appendicitis is the first cause of abdominal surgery worldwide [3]. Stump appendicitis can present the same symptoms as before the first operation and the diagnosis is often not considered because of the past surgical history [2, 3]. A comprehensive review of the literature revealed 36 reported cases of stump appendicitis [1].

To our knowledge, only 5 cases have been reported in which CT was used to correctly identify stump appendicitis [8, 14]. This paper reports a patient with a stump appendicitis that was diagnosed using CT and ultrasonography preoperatively.

Case report

A 18-year-old man presented to the emergency department with a 12-hr history of diffuse abdominal pain which localized to the right lower quadrant on admission. The patient complained of nausea and vomiting after the pain started. Physical examination revealed that the temperature was 38°C (oral), blood pressure 125/70 mmHg and pulse rate was 90/min. His abdomen had local peritoneal signs including tenderness, rebound tenderness and guarding in RLQ area of abdomen. Routine laboratory tests such as WBC count was 7600 with 68% PMN and urinalysis was negative. Surgical history was notable for an open appendectomy that was performed 7 months ago.

A preoperative diagnosis of stump appendicitis was made on the basis of the abdominal ultrasonography and CT study. Abdominal ultrasonography revealed a heterogeneous hypoechoic mass at the right lower quadrant and a tubular lesion similar to inflamed appendix (Fig. 1). CT scan of the abdomen and pelvis showed a tubular structure extending

H. Salehi¹ · S. H. Anjamrooz²

¹Department of Surgery

²Anatomical sciences,
University of Medical Sciences,
Rafsanjan, Iran

H. Salehi (✉)

Department of Surgery,
Ali Ebne Abitaleb Hospital,
Rafsanjan, Iran

e-mail: dr_hosseinsalehi@yahoo.com

from the base of the cecum, with an enhancing wall and stranding of the adjacent fat, consistent with an inflamed appendiceal stump (Fig. 2). There were also findings representing gross pathologic specimen of resected appendiceal stump (Fig. 3).

Fig. 1 Abdominal ultrasonography showing appendiceal stump (*circle*).

Finally laparotomy was done through lower midline incision. On the operation there was omental adhesion to cecum and inflammatory reaction in periceal area. After entrolysis and partial omentectomy there was a remnant appendiceal stump that was suppurative and measured about 3 cm. Stump appendectomy was performed. A drain was placed and the abdomen was closed and specimen sent for pathologic analysis which confirmed stump appendicitis. The patient was discharged from the hospital three days after operation.

Discussion

Although rare, a diagnosis of stump appendicitis should be considered when a patient with a history of appendectomy presents with signs and symptoms similar to appendicitis [15]. Stump viscera caused by an incomplete operation can present the same symptoms as before the first operation. Furthermore, as an acute clinical event, these incomplete resections may sometimes cause acute abdomen and may need emergency surgical intervention [1]. So all patients who have undergone appendectomy are potentially at risk. Its exact rate of incidence and its prevalence in the population are not accurately defined, however nearly thirty-six cases have been reported in the worldwide medical literature since the first case reported by Rose in 1945 [1, 6]. The age of patients with stump appendicitis ranges from 11 to 72 years. The time intervals from initial appendectomy to stump appendicitis range from 2 months to 51 years [8]. A

Fig. 2 Contrast-enhanced CT scan of abdomen showing enlarged appendiceal stump (*circle*).

Fig. 3 Gross pathologic specimen of resected appendiceal stump. Note surgical staple line from initial appendectomy (arrow) and stump appendectomy (arrowhead).

long appendiceal stump is reported to be a risk factor for stump appendicitis. Appendiceal stump lengths are reported to range from 0.5 cm to 5.1 cm [9–12, 16]. In our case the depth of appendiceal stump was about 30mm. According to previous reports an appendiceal stump less than 3 mm in depth can minimise the incidence of stump appendicitis [12]. Stump appendicitis correlates with the long appendiceal stump which remained after the previous appendectomy. While knowledge of stump appendicitis makes it possible to reach the diagnosis using imaging techniques and thereby reduce the morbidity of this condition [2], CT and ultrasonography findings may not be specific for stump appendicitis. Nonspecific inflammatory findings such as pericecal inflammatory changes, cecal wall thickening, abscess formation and fluid in the right paracolic gutter can be found in cases of stump appendicitis [13–16]. Preoperative screening techniques may help to diagnose the disease [7–15, 16]. Only 1 case diagnosed by preoperative ultrasonography is available in the literature. In our case, although a pathologic lesion was detected at the right lower quadrant by ultrasonography, no specific finding of stump appendicitis was detected. Preoperative CT is a more efficient technique. To our knowledge, 5 cases have been diagnosed by CT having stump appendicitis apart from our case to date [8, 14]. CT findings were not specific and revealed an ileocecal mass or pelvic abscess, and diagnosis was confirmed only during surgery [14]. A stump that is long enough to be identified as such prospectively on CT may not be present [14].

In the patient reported here with acute right lower quadrant findings mimicking appendicitis, the history of prior

appendectomy does not absolutely rule out the possibility of appendicitis. But this situation usually causes an important delay of their diagnosis and treatment. In patients with stump appendicitis, sonography before surgery proved capable of identifying initial inflammatory changes present in acute edematous stump appendicitis. CT scan not only assists in making an accurate preoperative diagnosis but also excludes other etiologies. Thus it is possible to avoid a delayed diagnosis or the use of more sophisticated examinations such as CT. Also awareness of the possibility of stump appendicitis combined with a high index of suspicion can help to make an early diagnosis.

References

1. Yigit T, Menten O, Eryilmaz M, Balkan M, Uzar AI, Kozak O (2007) Stump resections resulting from incomplete operations. *Am Surg* 73:75–78
2. Carcacia ID, Vazquez JL, Iribarren M, Pardellas H (2007) Preoperative diagnostic imaging in stump appendicitis. *Radiologia* 49:133–135
3. Robledo-Ogazon F, Bojalil-Duran L, Vargas-Rivas A, Torres-Vieyra L, Valle-Carmona Y (2005) Appendiceal stump appendicitis: case report. *Cir Cir* 73:311–314
4. Roche-Nagle G, Gallagher C, Kilgallen C, Caldwell M (2005) Stump appendicitis: a rare but important entity. *Surgeon* 3:53–54
5. Rose TF (1945) Recurrent appendiceal abscess. *Med J Aust* 32:652–659
6. Aschkenasy MT, Rybicki FJ (2005) Acute appendicitis of the appendiceal stump. *J Emerg Med* 28: 41–43
7. Uludag M, Isgor A, Basak M (2006) Stump appendicitis is a rare delayed complication of appendectomy: a case report. *World J Gastroenterol* 12:5401–5403
8. Gupta R, Gernshiemer J, Golden J, Narra N, Haydock T (2000) Abdominal pain secondary to stump appendicitis in a child. *J Emerg Med* 18:431–433
9. Erzurum VZ, Kasirajan K, Hashmi M (1997) Stump appendicitis: a case report. *J Laparoendosc Adv Surg Tech* A7:389–391
10. Mangi AA, Berger DL (2000) Stump appendicitis. *Am Surg* 66:739–741
11. Aschkenasy MT, Rybicki FJ (2005) Acute appendicitis of the appendiceal stump. *J Emerg Med* 28:41–43
12. Thomas SE, Denning DA, Cummings MH (1994) Delayed pathology of the appendiceal stump: a case report of stump appendicitis and review. *Am Surg* 60:842–844
13. Rao PM, Sagarin MJ, McCabe CJ (1998) Stump appendicitis diagnosed preoperatively by computed tomography. *Am J Emerg Med* 16:309–311
14. Baldisserotto M, Cavazzola S, Cavazzola LT, Lopes MH, Motin CC (2000) Acute edematous stump appendicitis diagnosed preoperatively on sonography. *Am J Roentgenol* 175:503–504
15. Shin LK, Halpern D, Weston SR, Meiner EM, Katz DS (2005) Prospective CT diagnosis of stump appendicitis. *AJR Am J Roentgenol* 184:62–64
16. Mangi AA, Berger DL (2000) Stump appendicitis. *Am Surg* 66:739–741