Anuria due to bilateral ureterolithiasis after appendectomy in a child

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Abstract

We report on a boy who presented with acute renal failure and bilateral ureteral obstruction 5 days after an uneventful appendectomy. In contrast to the few cases described in the literature, bilateral ureterolithiasis was the pathogenesis of ureteric obstruction. The clinical signs and diagnostic findings, and an overview of the literature are presented. The severity of permanent renal damage in a child underlines the importance of this report.

Keywords

Appendectomy; ureterolithiasis; anuria.

Case report

An 11-year-old boy was admitted to our hospital with a 1-day-history of abdominal pain accompanied by nausea and vomiting. Anamnesis did not provide any circumstantial evidence. On physical examination, the boy showed the usual signs of appendicitis including localised abdominal tenderness with guarding in the right iliac fossa. Laboratory tests showed major leucocytosis and an increase of C-reactive-protein. At laparotomy, a perforated gangrenous appendix with a perityphlilitic abscess was found. We performed a conventional appendectomy with drainage of the abscess with two easy-flow-drainages. One was placed in the Douglas cavity and the other near the coecal pole. Histopathology revealed a neutrophilic infiltrate within the mucosa and submucosa and a suppurative inflammation that extended through the appendiceal wall into the adipose tissue (Fig. 1).

Initially, the further clinical course was uncomplicated. Five days post-procedure, the boy suddenly complained about nausea, vomiting, and colicky pain in both the right and left iliac fossa. At this time, the patient was free of any dietary restrictions or infusion regimens and waiting for discharge. Diagnostics, including abdominal and wound examination, laboratory tests, urine analysis, and abdominal ultrasound were normal. Initially, the little patient recovered spontaneously, but complaints returned the next day. On reflection, the boy now specified anuria for almost 20 h. Laboratory tests revealed acute renal failure with an increase in urea to 86 mg/dl, creatinine 3.1 mg/dl, and uric acid 9.0 mg/dl. Abdominal ultrasound showed a urinary stasis grade

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Fig. 1. Low magnification view of a longitudinal section of the vermiform appendix (hematoxylin–eosin, ×125).

Fig. 2. Abdominal ultrasound reveals bilateral urinary obstruction with dilatation of the renal pelvis.

Fig. 3. Native body-weight adapted low dose pelvic CT scan (Somatom Sensation 16, tube voltage 120kV, 13 mAs, collimation 16 × 1.5 mm, tube rotation time 500 ms) shows hyperdense structures in projection to the distal ureters bilaterally, consistent with calculi.
II with bilateral dilatation of the ureters, renal pelvis, and calyces; the empty urinary bladder had a normal wall thickness (Fig. 2).

As the distal ureters were superposed due to intestinal gas, ultrasound could not reveal the reason for obstruction. Thus, a native CT scan was performed, which indicated calculi in both distal ureters (Fig. 3). During the following retrograde ureteroscopy, all stones were removed and mono-J-catheters were inserted bilaterally. After 7 days, the boy was released without further complaints.

Discussion

Cases of bilateral ureteral obstruction after appendectomy in a child are rare[2–7]. Nevertheless, all cases in the literature have common features. All patients suffered from severe appendicitis with perityphlitic abscess formation. Symptoms like anuria, renal failure, nausea, and colicky pain started several days after surgery. Finally, in all cases the pathogenesis of the obstruction was an oedema of the posterior bladder wall. Contaminated by the perityphlitic abscess, the peritoneal cavity caused an inflammatory oedema of the local environment[5]. Consequently, conservative treatment including insertion of ureterocatheters and application of antibiotics restored diuresis[6].

Our patient showed similar features. Five days after severe appendicitis, the boy suffered from pain in both iliac fossae. The pain was accompanied by anuria, nausea, and vomiting and finally led to renal failure. However, the reason for the obstruction was different and very rare. Concrements in both ureters hindered renal drainage, although the posterior wall of the bladder appeared normal. It is very likely that these calculi formed after surgery due to lack of liquid supply. The patient probably did not drink enough during his hospitalization. Since the appendectomy was performed 5 days before, he was free of any dietary restrictions and intestinal complaints. As the initially complaints recovered spontaneously for more than 24 h and all primary tests did not reveal any pathologic findings, the diagnosis was further delayed. Superposed by intestinal gas, only a native CT scan could finally reveal ureteral calculi on both sides. Because of the severity of permanent renal damage in a child, an abdominal ultrasound should always be performed if a patient presents with colicky pain or anuria after an appendectomy. A CT scan should be arranged, if an ultrasound does not detect a reason for the anuria. Due to the rarity of the diagnosis, conservative treatment was not followed; the calculi present in both ureters were removed.

Teaching point

We report on a case of bilateral ureteral obstruction 5 days after an uneventful appendectomy. The rarity of the disease and the danger of permanent renal damage in the case of deficient treatment stress the impact of this report. Diagnostics can be challenging as complaints vary. Detailed anamnesis and clinical examination, laboratory and urine analysis, and an abdominal ultrasound should be carried out. A native CT scan may also be necessary. After diagnosis, routine treatment should be uncomplicated. Nevertheless, it has to start immediately.

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References

