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Abdominal compartment syndrome due to distended rectal stump

Rektal güdük distansiyonuna bağlı abdominal kompartman sendromu

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Abdominal compartment syndrome is a serious and life-threatening condition that requires early recognition and urgent decompressive laparotomy. This case report describes an abdominal compartment syndrome due to a distended rectal stump. The patient had a previous sigmoid resection with colostomy performed for sigmoid volvulus. As far as we know, this is the first report of abdominal compartment syndrome due to rectal stump. In such cases, high index of suspicion and early intervention affect the clinical course.

Key words: Abdominal compartment syndrome, sigmoid colon, volvulus

Abdominal kompartman sendromu, erken tanı ve acil dekompresif laparatomi gerektiren ciddi ve hayatı tehdit edici bir durumdur. Bu olgu sunusunda, rektal güdük distansiyonuna bağlı abdominal kompartman sendromu sunulmaktadır. Hastaya, sigmoid volvulus nedeniyle sigmoid rezeksiyon ve kolostomi açılması ameliyatı yapılmıştı. Bildiğimiz kadarıyla olgumuz, rektal güdük distansiyonuna bağlı gelişen ilk abdominal kompartman sendromudur. Böyle olgularda klinik şüphe ve erken girişim, klinik seyri olumlu etkiler.

Anahtar kelimeler: Abdominal kompartman sendromu, sigmoid kolon, volvulus

INTRODUCTION

Abdominal compartment syndrome (ACS) is defined as elevated intra-abdominal pressure (IAP) with resultant organ dysfunction (1, 2). Increased IAP causes progressive hypoperfusion and ischemia of the intestines as well as other peritoneal and retroperitoneal structures, including the pulmonary, cardiovascular, renal, splanchnic, and central nervous systems (2, 3). Pathophysiological effects include release of cytokines, formation of free oxygen radicals, and decreased cellular production of adenosine triphosphate. These processes may lead to translocation of bacteria from the gut and intestinal edema, predisposing patients to multiorgan dysfunction syndrome (2, 3).

This case report describes an ACS due to a distended rectal stump. The patient had a sigmoid resection with colostomy performed for sigmoid volvulus. As far as we know, this is the first report of ACS due to a stump, which could be managed easily by proper evaluation of the patient.

CASE REPORT

An 85-year-old man underwent sigmoid resection with end colostomy for sigmoid volvulus. There was no perforation, ischemia or fecal spillage during the operation. The whole of the distended sigmoid colon was resected. The remaining normally appearing rectum was irrigated per-operatively and handsewn closure in two layers was used. He was accepted to surgical intensive care unit, postoperatively. On the postoperative second day, he had abdominal distension, mild oliguria, edema and discoloration at colostomy and edema with cyanosis at the lower extremities. No bowel sound was present on auscultation. Early postoperative paralytic ileus was proposed. On the third day, abdominal distension worsened and anuria developed with overt ischemic necrosis of the ostomy and edema with cyanosis at the lower extremities. At the same time, severe combined respiratory and metabolic acidosis occurred. IAP measured by U-Tube technique via urinary bladder was 33 mmHg. With the diagnosis of ACS, the patient underwent emergency exploration which revealed a

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Figure 1. Distended distal rectal stump with ischemic changes at exploration

distended distal rectal stump with ischemic areas (Figures 1, 2). ACS was considered to be due to this condition. There was no fecal impaction or other obstructive pathology in the rectum and the suture line was intact. By intraoperative rectal decompression, ischemic and obstructive changes regressed promptly, restoring ostomy color, urination and finally resolving the lower extremity edema. Blood tests also normalized, and drainage from the ostomy began. Postoperative antibiotic regimen with ceftriaxone 1 g/12 h and ornidazole 500 mg/12 h was started. On the sixth postoperative day, diffuse rales and rhonchi at right chest auscultation began and a rapid evaluation revealed an atelectasis of the left lung. With an emergency bronchoscopy, a mucus clot was removed. After restoring pulmonary function, sepsis developed with methicillin-resistant *Staphylococcus aureus*. Antibiotic therapy included vancomycin 1 g/12 h, amikacin 1 g/24 h and meropenem 1 g/8 h. A tracheotomy was performed on the 15th postoperative day for persistent pulmonary failure. On the 23rd day, he died of multiorgan failure due to bilateral bronchopneumonia and sepsis.

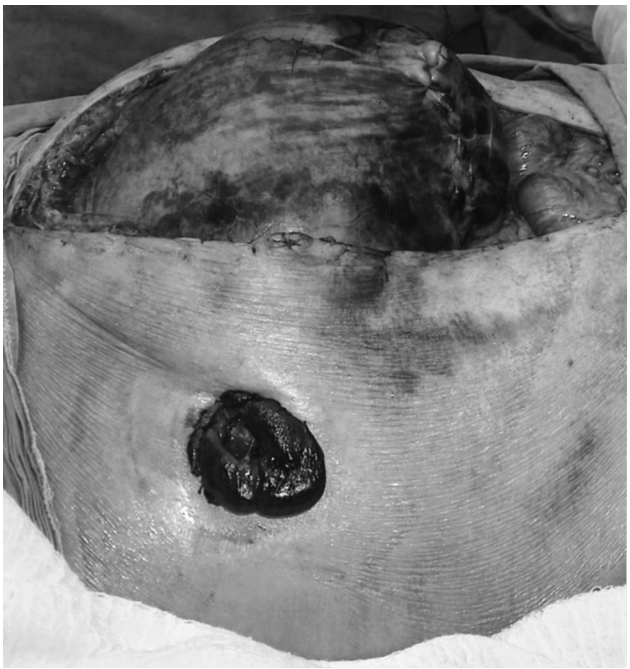

Figure 2. Per-operative scene of distal rectal stump and colostomy. Note the ischemic changes at the cutaneous end

DISCUSSION

ACS is increasingly being recognized as a significant cause of morbidity and mortality worldwide. The World Society of the Abdominal Compartment Syndrome (WSACS) states that ACS should be diagnosed if IAP is more than 20 mmHg (4). It is frequently seen in patients in the intensive care units but not always recognized, as shown by a recent multicenter prevalence study. In this study by Malbrain et al. (5), 8.2% of patients in intensive care units had ACS, which based on clinical and biochemical factors alone would not have been evident, demonstrating the need for a high index of suspicion. A questionnaire study by Ravishankar et al. (6) showed that 75.9% of units had measured IAP, which was similar to that reported by Tiwari et al. (7) (78.7% of units). The diagnosis was confirmed by most of the units by a combination of clinical parameters and IAP measurement. However, district general hospitals were more likely to diagnose ACS based only on clinical examination, though there is no evidence to support this, and diagnosis should only be made after measuring IAP (7). In the case presented, the diagnosis was made by both clinical parameters and IAP measurement, which is the gold standard for confirming this condition. IAP can be measured by direct and indirect methods. Direct methods include insertion of a cannula into the peritoneal cavity and attaching it to a saline manometer or pressure transducer (8-11). However, direct measurement of IAP is difficult and invasive. Indirect methods include inferior vena cava (12), gastric (13, 14), and urinary bladder measurements (8, 9, 15-17). IAP is commonly measured via urinary bladder (8, 9, 15-17), and this technique was also used in our case. The bladder pressure using the U-tube technique is simple, does not require additional equipment, and can be performed by any member of the medical team (8).

ACS is a potentially lethal condition caused by any event that produces intra-abdominal hypertension and can cause multiorgan dysfunction in patients after emergency abdominal surgery and trauma (18). Other causes include status post-elective surgery (19), liver transplantation (20), renal transplantation (21), megarectum due to fecal impaction (22), large bowel obstruction (23), and additionally the case of rectal stump presented here.

Surgical decompression is the only available definitive treatment for ACS. ACS is a condition with a high morbidity and mortality if unrecognized or untreated (7). An analysis of 18 articles with 250 patients revealed a mortality rate of 49.2% (123/250) after surgical abdominal decompression (1). Decompression supplies rapid recovery of renal, pulmonary and hemodynamic changes (24). Need for prolonged mechanical ventilation, multiorgan failure, acute renal failure and acute respiratory distress syndrome (ARDS) are common complications following decompression (18, 24, 25). Our case died of multiorgan failure due to severe bilateral bronchopneumonia and sepsis.

In view of the above, a distended rectal stump should also be kept in mind as a possible cause of ACS. A high index of suspicion may lead to early intervention. A proper abdominal decompression can be accomplished extra-abdominally by a digital rectal exam and also by a rigid proctoscope.

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