Transverse colon volvulus in neurologically impaired patient as an emergency surgical condition – A case report

Volvulus transverzalnog kolona kao hitno hirurško stanje kod neurološki izmenjenog bolesnika

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Abstract

Introduction. Transverse colon volvulus is an uncommon cause of bowel obstruction in general. Predisposing factors are mental retardation, dysmotility disorders, chronic constipation and congenital megacolon. Case report. We presented transverse colon volvulus in a 16-year-old boy with cerebral palsy. Chronic constipation in neurologically impaired patient was a risk factor predisposing to volvulus. The patient was admitted to the hospital with enormous abdominal distension and acute respiratory insufficiency. A boy was emergently taken to the operating room for exploratory laparotomy. During the surgery, a 360º clockwise volvulus of the transverse colon was found. After reduction of volvulus, an enormous transverse colon was resected and colostomy was formed. In the postoperative period, despite the good functioning of stoma and intraabdominal normotension, numerous and long lasting respiratory problems developed. The patient was discharged from our institution after 8 months. Conclusion. Though very rare in pediatric group, the possibility of a transverse colon volvulus must be considered in the differential diagnosis of acute large bowel obstruction.

Key words: intestinal volvulus; colon; cerebral, palsy; comorbidity; digestive system surgical procedures; colostomy; postoperative complications; bronchopneumonia.

Introduction

Transverse colon volvulus is an uncommon cause of bowel obstruction in general 1. Predisposing factors are: mental retardation, dysmotility disorders, chronic constipation and congenital megacolon 2. Despite the known predisposing factors, extremely rare occurrence in pediatric population is the reason why this condition is diagnosed very often during laparotomy 3. Contrast enema is an useful diagnostic tool, as well as computed tomography (CT) 2, 4. Our patient had clinically subacute progressive presentation, unrecognized for a long period. At the time of admittance to our institution, his condition required emergency surgical treatment.

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Case report

A 16-year-old boy with cerebral palsy presented with extremely distended abdomen and acute respiratory insufficiency. During his life he was repeatedly hospitalized for chronic constipation. At the time of admission to the Pediatric Intensive Care Unit (PICU), beside clinical signs of severe cerebral palsy, the patient was subfebrile, anxious and diaphoretic and had severe abdominal pain. He was extremely dyspnoic with oxygen saturation of 74% measured by pulse oximetry on room air. Physical examination revealed massively distended abdomen, tympanic and without bowel sounds. The abdominal wall was tender. Rectal ampulla was empty. Electrocardiography showed sinus tachycardia (162 beats/min) followed by arterial hypertension of 210/160 mmHg. Nasogastric tube inserted initially obtained 150 mL of dark-brown content. Blood-gas analysis revealed mixed metabolic and respiratory acidosis. Conditions for urgent orotracheal intubation were provided and synchronized intermittent mandatory ventilation mode of mechanical ventilation was undertaken. Plain abdominal and chest radiography showed enormously distended bowel elevating diaphragmatic cupola on both sides, causing lung compression and almost completely disabling ventilation (Figure 1).

The intraabdominal pressure was 17 mm Hg. Intraoperative findings demonstrated a rotation of the transverse colon of 360° degrees in a clockwise direction, causing a closed loop obstruction. The transverse colon was massively dilated, but ascending colon and small bowel loops were markedly distended, too (Figure 2). After mobilization and detorsion, the enlarged transverse colon was resected and double-barrel stoma was created in the left hypochondriac region. Postoperatively, the stoma functioned well and intraabdominal pressure was normal.

On the day of operation the patient was extubated, but on the first postoperative day he was dyspnoic, gas exchange was impaired and he was intubated again. Bronchopneumonia was diagnosed, complicated by pleural effusion requiring drainage on the left side. During mechanical ventilation, the right lung was collapsed because of pneumotorax due to airway obstruction caused by mucus, resolved by right pleural drainage. We decided to do tracheostomy and tracheostomy cannula setting was taken on. Weaning from mechanical ventilation was difficult. After 130 days the patient was discharged from the PICU 8 months following admission.

Discussion

Volvulus of transverse colon is a rare condition, especially in children. About 30–50% of children with transverse colon volvulus appear to have the history of chronic constipation, which is either idiopathic or secondary to congenital megacolon and neurological diseases. Constipation can promote elongation and chronic redundancy of the transverse colon. Colon becomes more mobile, thus it can easily twist upon itself. The current case also was associated with cerebral palsy and had the history of chronic constipation. Our patient presented with subacute transverse colon volvulus, but delayed diagnosis and treatment resulted in progressing to the acute fulminating type with bowel infarction.

It is a great challenge to diagnose transverse colon volvulus. In a patient with clinical deterioration, radiography may be the only, although insufficiently sensitive diagnostic procedure. Diagnosis is made by barium enema or CT. In the presented patient there was suspicion of intestinal gangrene and ventilation was almost impossible because of enormous abdominal distension. Intra-abdominal hypertension threatened to develop into abdominal compartment syndrome. Due to the need for emergency explorative laparotomy we decided

Fig. 1 – Abdominal and chest radiography demonstrating enormously distended bowel and elevation of both hemidiaphragms.

Fig. 2 – Transverse colon volvulus – intraoperative image of large bowel dilatation.


against performing a barium enema and other diagnostic procedures.

The definitive treatment of transverse colon volvulus is surgical. The recommended operative procedure consists of detorsion, resection of the involved segment since it is viable and primary anastomosis or stoma creation. In the presented patient, at least two groups of factors contributed to pulmonary complications. Firstly, children with cerebral palsy, in general, suffer from a high incidence of repeated respiratory infections, restrictive lung disease, atelectasis and bronchiectasis and secondly, increased intra-abdominal pressure causes direct mechanical impairment of the lung, heart, renal and splanchnic function. Because of a threatening progress to multiorgan system failure, urgent surgical treatment was performed one and half an hour after the patient’s admittance at our institution.

**Conclusion**

Though very rare in the pediatric group, the possibility of a transverse colon volvulus must be considered in the differential diagnosis of acute large bowel obstruction. Neurologically impaired children, apart from chronic constipation, have many associated problems that make decision for operation difficult, but any operation delay leads to high morbidity and mortality. Early surgical intervention consisting of bowel resection with primary anastomosis or with stoma, is the treatment of choice.

**REFERENCES**