



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

Maja Miličković*, Djordje Savić*, Nikola Stanković†, Miroslav Vukadin*, Aleksandar Vlahović‡, Dejana Božić§

*Department of Abdominal Surgery, †Department of Anesthesiology, ‡Department of Plastic and Reconstructive Surgery, §Department of Pathology, Institute for Mother and Child Healthcare of Serbia „Dr. Vukan Čupić“, Belgrade, Serbia

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 360° 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.

Apstrakt

Uvod. *Volvulus* transverzalnog kolona je redak uzrok opstrukcije creva. Predisponirajući faktori su mentalna retardacija, poremećaji motiliteta, hronična konstipacija i kongenitalni megacolon. **Prikaz bolesnika.** Prikazali smo *volvulus* transverzalnog kolona kod dečaka sa cerebralnom paralizom starog 16 godina. Hronična konstipacija predstavljala je faktor rizika kod neurološki izmenjenog deteta i dovela je do *volvulus*-a. Bolesnik je primljen sa velikom distenzijom trbuha i akutnom respiratornom insuficijencijom. Hitno je odveden u operacionu salu radi eksplorativne laparotomije. Intraoperativno, nađen je *volvulus* transverzalnog kolona od 360° u pravcu kazaljki na satu. Nakon redukcije *volvulus*-a, jako uvećan transverzalni kolon reseciran je i otvorena je kolostoma. Postoperativno, bez obzira na dobro funkcionisanje stome i normalan intraabdominalni pritisak, razvili su se brojni i dugotrajni respiratorni problemi. Bolesnik je otpušten iz naše ustanove nakon 8 meseci. **Zaključak.** Iako je veoma redak u pedijatrijskoj populaciji, u diferencijalnoj dijagnozi akutne opstrukcije debelog creva mora se uzeti u obzir i mogućnost *volvulus*-a transverzalnog kolona.

Ključne reči:

creva, *volvulus*; kolon; paraliza, cerebralna; komorbiditet; hirurgija digestivnog sistema, procedure; kolostomija; postoperativne komplikacije; bronhopneumonija.

Introduction

Transverse colon *volvulus* is an uncommon cause of bowel obstruction in general¹. Predisposing factors are: mental retardation, dysmotility disorders, chronic constipation and congenital megacolon². Despite the known predisposing factors, extremely rare occurrence in pediatric po-

pulation is the reason why this condition is diagnosed very often during laparotomy³. 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.

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 Paediatric 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).



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

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 pneumothorax 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.



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

Discussion

Volvulus of transverse colon is a rare condition, especially in children^{2,3,5,6}. 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^{2,3,7,8}. Constipation can promote elongation and chronic redundancy of the transverse colon². 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*². In a patient with clinical deterioration, radiography may be the only, although insufficiently sensitive diagnostic procedure^{2,4}. Diagnosis is made by barium enema or CT⁴. 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

against performing a barium enema and other diagnostic procedures.

The definitive treatment of transverse colon *volvulus* is surgical². The recommended operative procedure consists of detorsion, resection of the involved segment since it is viable and primary anastomosis or stoma creation². 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^{9,10}. Because of a threatening progress to multiorgan system failure, urgent surgical treat-

ment 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.

R E F E R E N C E S

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