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Clinical Quiz

Ogilvie syndrome following pediatric scoliosis surgery

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Case

A 17-year old female with neuromuscular scoliosis secondary to CP and spastic quadriparesis amenable to PSIF was seen in clinic and consented for surgery. Figure 1a demonstrates a Group I neuromuscular scoliosis pattern. Routine pre-operative bloodwork showed normal values. A navigated T2-S1 PSIF was performed under skull-femoral traction (Figure 1b). Intraoperative neuromonitoring and postoperative neurological examination showed no neurological injuries.

On postoperative day (POD) three, the patient developed diffuse abdominal pain and distension. Attempts to decompress the colon with intermittent rectal tubing yielded large amounts of gas and stool, but she remained distended. On POD six, she deteriorated clinically and was admitted to the pediatric intensive care unit in septic shock. Despite giving neostigmine for OS, her condition worsened. Abdominal radiography (Figure 2) revealed free air and she was started on broad-spectrum antibiotics and taken to the operating room emergently for an exploratory laparotomy. Intra-operatively, she was found to have cecal perforation with gross peritoneal contamination. An ileocecal resection and end ileostomy with mucus fistula was performed. Post-operatively, she remained febrile and ultrasonography revealed three fluid collections with the largest in the right lower quadrant measuring 2.8 x 6.3 x 7.2 cm suggestive of abscess collection. The largest collection was drained percutaneously and broad-spectrum antibiotics were continued. On POD 20, she was tolerating a normal diet, medically stable on room air, and had returned to baseline function. Repeat ultrasonography showed interval improvement in her collections and she was discharged home. No infectious complications relating directly to the PSIF were reported in follow-up appointments.

Commentary

Scoliosis is a common condition associated with neuromuscular patients. Neuromuscular scoliosis is a challenging problem for pediatric spine surgeons. Posterior spinal instrumentation fusion (PSIF) for progressive neuromuscular scoliosis is improving the quality of life in non-ambulatory patients[1]. PSIF with high-density pedicle screw constructs is the preferred technique to manage progressive neuromuscular scoliosis curves. However, a high complication rate has been reported, ranging from 24-75%[2].

Gastrointestinal complications following spinal surgery have been reported in several studies[1-3]. Paralytic ileus and superior mesenteric artery syndrome (SMA) are well known complications associated with the correction of spinal deformity. Pancreatitis is another common complication following scoliosis surgery. Nishnianidze et al.[1] reported a 54.4 % rate of pancreatitis post-operatively after reviewing 303 patients with neuromuscular scoliosis.

OS has been previously recognized as a cause for diffuse abdominal pain and distension following adult spinal surgery[4,5]. Few cases have been described following spine surgery in the pediatric population. Hooten et al.[4] reported a case of OS following a tethered cord release surgery in an adolescent. Only one case has been reported following spine deformity correction[5]. However, this case was complicated by Arnold-Chiari 1 malformation and extensive cervicothoracic syringomyelia.

At our institution, we encountered a novel presentation of OS in a CP patient following PSIF. To our knowledge, this is the first reported case in the literature of OS in a neuromuscular scoliosis patient. Some factors have been shown to produce an autonomic imbalance leading to excessive parasympathetic inhibition resulting in colonic atony and pseudo-obstruction[4,5]. In our case, risk factors

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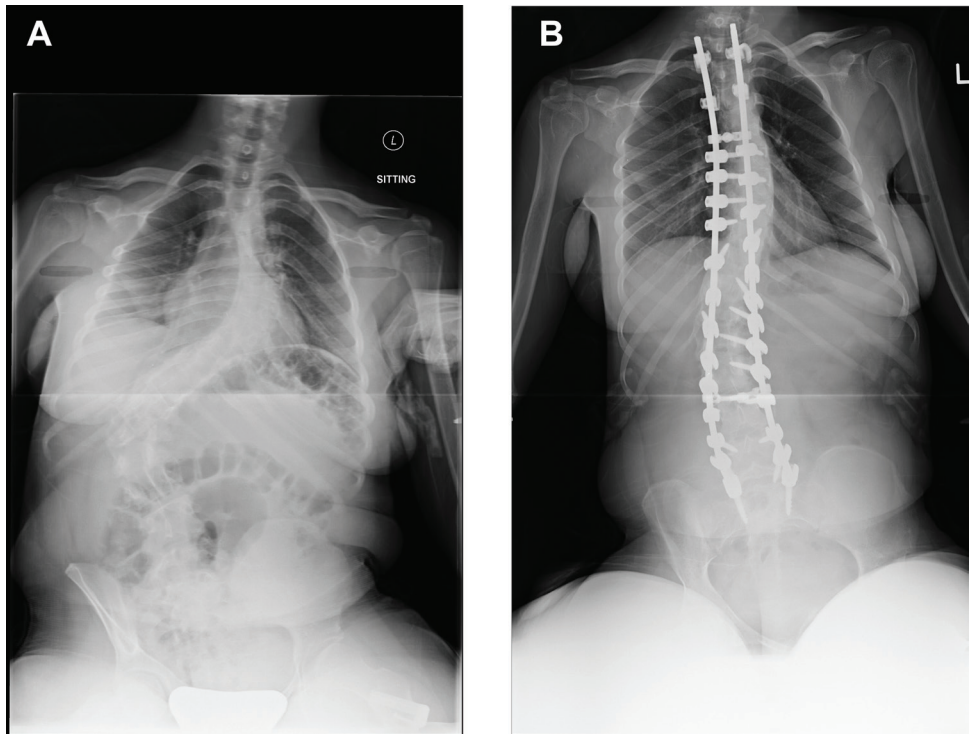

Figure 1. a) Preoperative PA scoliosis film showing S-shaped neuromuscular scoliosis with a double curve involving T3-T11, Cobb angle=75° and T12-L4, Cobb angle=72°; b) postoperative PA scoliosis film showing the correction of T2-S1 with posterior spinal instrumentation fusion.

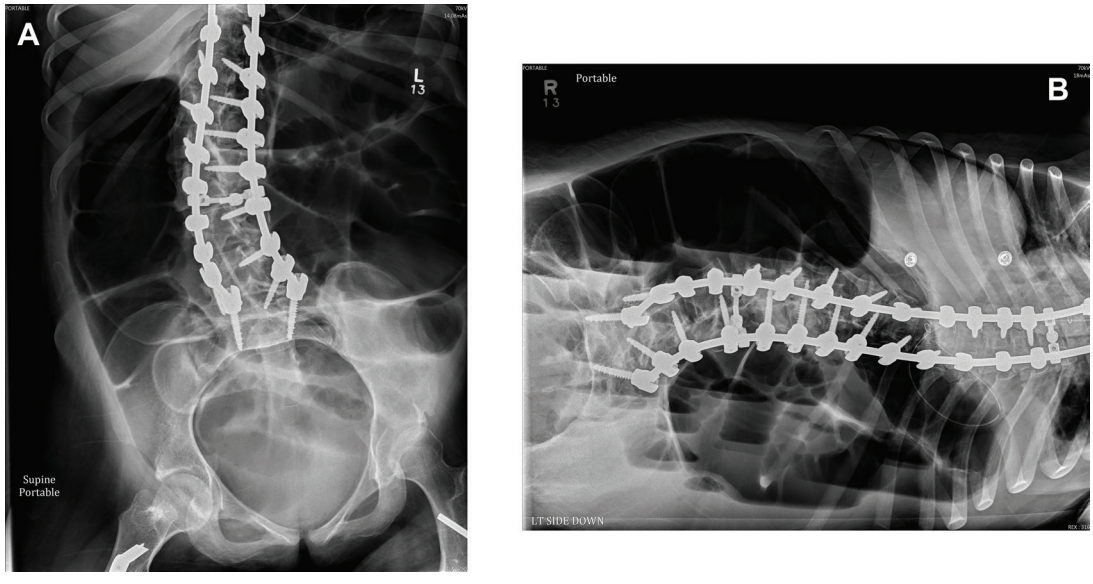

Figure 2. a) AP and; b) lateral abdomen radiographs showing distended bowel loops with air-fluid levels and a small amount of free intraperitoneal air.

for OS included surgical insult, pre-existing neuromuscular condition and as the use of opioid analgesia post-operatively.

The similitude of symptoms in OS compared with less harmful complications such as paralytic ileus can delay diagnosis of this life-threatening syndrome and should be on the differential diagnosis in patients with unexplained abdominal distension after mechanical obstruction has been ruled out. Currently, no published clinical algorithms or guidelines addressing the diagnosis and management of OS in patients with scoliosis surgery are available. Given the seriousness of this complication, we recommend considering OS as part of the differential diagnosis in post-operative patients with abdominal pain and distension. Vigilant observation, early diagnosis and implementation of conservative management including discontinuing opiates, nil per os, electrolyte monitoring, gastrointestinal decompression, can prevent bowel ischemia and perforation requiring invasive procedures like laparotomy in the management of OS.

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Questions

1. Ogilvie's syndrome often associated with surgical interventions including

A. cesarean section
B. abdominal and pelvic surgery
C. urologic/thoracic/neurosurgical
D. coronary bypass procedures
E. all the above

Critique

The most common predisposing conditions of this syndrome include trauma, infections and cardiac diseases, caesarean section, abdominal and pelvic surgery, urologic/thoracic/orthopaedic/neurosurgical/spinal and coronary bypass procedures and medications such as opioids, calcium channel blockers and anticholinergics.
The correct answer is E.

2. The course/prognosis of Ogilvie syndrome is always benign, even if undiagnosed or left untreated:

A. correct
B. wrong

Critique

Ogilvie's Syndrome, if undiagnosed or left untreated, may lead to the same pathologic changes as any mechanical large bowel obstruction: increasing bowel dilation and distension, dehydration, edema and eventual ischemia and necrosis of the bowel wall, bacterial translocation and sepsis, and eventual bowel wall perforation.
The correct answer is B.

3. Ogilvie syndrome is defined as a large bowel obstruction as a result of an obstructing lesion:

A. correct
B. wrong

Critique

Ogilvie's syndrome include gross dilatation of the colon and cecum without mechanical block
The correct answer is B.

4. Ogilvie' syndrome is imbalance in the regulation of the colonic motor activity by the autonomic system, which leads to excessive sympathetic stimulation or parasympathetic suppression.

A. correct
B. wrong

Critique

Although the exact pathophysiology is not fully understood, an imbalance between the sympathetic and the parasympathetic system may be responsible.
The correct answer is A.