

## An uncommon orthogeriatric syndrome: a case of Ogilvie's syndrome

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### Abstract

Acute colonic pseudo-obstruction (ACPO), also known as Ogilvie's syndrome, is an uncommon postoperative complication of major orthopedic surgery that is characterized by massive colonic dilatation and the potential for substantial morbidity and mortality. Most patients who had Ogilvie's syndrome had risk factors that could be identified preoperatively, such as immobility, elevated comorbidity, and polypharmacy, prefiguring the frail elderly patient.

In modern terms, it is considered a typical orthogeriatric syndrome. In these kinds of patients, we need to be vigilant for its

development and judicious in the use of epidural anesthesia. We present an ACPO case in an elderly frail patient with a hip fracture, and we review the available literature to outline clinical characteristics and outcomes. Our patient presented numerous risk factors for developing the syndrome in the preoperative period: nonautonomy in basic and daily living activities, polypharmacotherapy, spinal trauma, and hyposodiemia. In this patient, epidural anesthesia was an additional risk factor.

The purpose of this case report is to emphasize the presence of this rare syndrome (1.5% of orthogeriatric patients) in orthogeriatric departments and to identify not only pharmacological, traumatic, and electrolytic risk factors but also those that can be identified even through geriatric evaluation to avoid the use of anesthesiologic techniques and drugs that may have an impact on the prognosis of these patients.

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### Introduction

Acute colonic pseudo-obstruction (ACPO), also known as Ogilvie's syndrome, is most commonly encountered in older adults with multiple underlying comorbidities, but it may also occur in otherwise healthy patients after a traumatic injury or following a surgical operation.

The exact pathogenesis of this condition has not been completely described; published case series have documented mean ages of 64 to 74 years.<sup>1</sup> Complications from Ogilvie's syndrome can be fatal and carry high mortality rates between 35% and 72%.<sup>2</sup> Patients are most often elderly with multiple comorbidities, nursing home residents, or people hospitalized after recent nonabdominal surgery. Patients suffering from progressive neurologic diseases, such as Parkinson's or Alzheimer's, fall victim to ACPO at a higher rate. It is important to remember that the diagnosis of ACPO is a diagnosis of exclusion, and all the common causes of functional or mechanical bowel dilatation must be investigated. Symptoms and signs of the disease usually manifest over 3 to 5 days after surgery but may also develop more acutely, sometimes within 48 hours. ACPO is considered complicated when the patient develops any evidence of bowel ischemia, peritonitis, or perforation. The risk of complications increases directly with the increase in cecal diameter and with the duration of the illness. Supportive care with close observation remains the primary treatment for patients with uncomplicated ACPO, although early pharmacologic intervention is increasingly encouraged. Invasive procedures or surgery are indicated for diseases that do not respond to conservative therapy or for those that have a complicated presentation.

The development of ACPO is unpredictable, and there are no definite causes. However, many clinical conditions that increase the risk have been identified. Advanced age, comorbidities associated

with electrolyte imbalance or polypharmacy, and poor underlying functional status or immobility are all strongly associated. Older adults who have been hospitalized, even for non-operative care, are at a higher risk.

A retrospective study of 48 cases analyzed the most frequent electrolyte disorders and drugs associated with the development of the syndrome: narcotics (56%), H-2 blockers (52%), phenothiazines (42%), calcium-channel blockers (27%), steroids (23%), tricyclic antidepressants (15%), epidural analgesics (6%), hypocalcemia (63%), hyponatremia (38%), hypokalemia (29%), hypomagnesemia (21%), and hypophosphatemia (19%) at diagnosis.<sup>3</sup>

In a retrospective study of 400 patients with ACPO, non-operative trauma, severe infection, and admission for cardiovascular disease were considered predisposing conditions in approximately 10% of cases.<sup>2</sup> Major orthopedic surgery and obstetric procedures are most associated with the development of ACPO.<sup>3,4</sup>

The cecum and ascending colon volumes grow, and the luminal diameter increases. Both the duration and the absolute diameter of colonic dilation have an impact on the risk of bowel ischemia or perforation. Very few cases of perforation have been reported when the cecal diameter is less than 12 cm. There is evidence of a direct correlation between the increasing diameter of more than 12 cm and the risk of complications. Duration of ACPO seems to be the greatest factor for perforation or ischemia, with the highest risk happening when dilation lasts more than 5 or 6 days with a direct impact on mortality.<sup>5</sup>

## Case Report

An 82-year-old woman, visually impaired, hypertensive, dyslipidemic, obese, and with a depressive syndrome, came to our orthogeriatric department for a multi-fragmentary, subtrochanteric hip fracture with pelvic and spinal trauma that occurred following an accidental fall at home. Home therapy included aspirin, proton pump inhibitors, trazodone, selective serotonin reuptake inhibitors, statins, thiazide diuretics, and sartan. High procalcitonin values and hyposodiemia were shown in the emergency room, and a chest computed tomography (CT) showed bronchopneumonia; therefore, antibiotic therapy has been started with piperacillin tazobactam 3 times per day for 12 days and enoxaparin 4000 1 subcutaneous injection once daily. The hip surgery was carried out the day after admission to the traumatology unit under epidural anesthesia. Four days later, she was transferred to our geriatric department. The geriatric assessment at the admission in the geriatric unit highlighted a lack of autonomy in activities of daily living (3/6 preserved) and instrumental activities of daily living (3/8 preserved) even before hip fracture, mood deflection, sarcopenia, and a normal mini-mental state examination (26, 7/30).

Three days post-surgery, the patient experienced abdominal meteorism and vomiting, which were accompanied by bowel movements close to feces, gas, and radiological signs of decanalization. These were conditions that the patient had never encountered before surgery. Therefore, a nasogastric tube was positioned, and adequate hydration with 1200 cc/die of saline and levosulpiride 50 mg intravenous fluids per day was carried out. The onset of diarrhea started 5 days after surgery, and coproculture and *Clostridioides difficile* research were performed, both of which were negative. The abdominal CT scan showed overdilatation of the cecum and right colon, with no signs of bowel ischemia or decanalization. The abdomen was treatable, open to liquid feces and gas, painful in the lower quadrants with normal peristalsis, so levosulpiride was stopped, and acetaminophen 1 gr intravenous fluids for pain, and neostigmine 2 mg intravenous fluids were started.

On the ninth day after surgery, for the persistence of vomiting episodes, we performed another abdominal CT with contrast that showed: a collapsed stomach, a regular caliber of the proximal duodenal-jejunal tract, and over-distension of some mesenteric loops located on the left side and in the lower quadrants of the abdomen. Distended appearance with fluid and gas of the right and proximal descending colon, while widespread parietal thickening is documented in the distal-sigmoid-rectum descending tract (maximum 7 mm at the rectum) characterized by progressive contrastographic impregnation in the absence of clear signs of current decanalization. The diagnostic hypothesis was Ogilvie's syndrome in progressive resolution. For persistent symptomatology, 25 days after surgery, a colonoscopic decompression was performed, and during the procedure, a rectum biopsy was conducted, showing severe ulcerative colitis, unclassifiable. It is known that Ogilvie's syndrome can histologically manifest as ischemic colitis.<sup>6</sup> During the hospitalization, the patient regularly practiced physiotherapy to reduce immobilization and was treated from the fourth day of onset of symptoms with neostigmine and after for persistent symptomatology with decompression by endoscopic techniques.

Two months after surgery, the patient died of comorbidities.

## Discussion

The incidence of this disease is frequently cited as approximately 100 cases per 100,000 hospital admissions every year. The prevalence appears to be slightly higher in males. At the time of presentation, the age is approximately 60 years. Almost all patients have multiple underlying comorbidities, and those who are functionally dependent at baseline develop the disease with the highest frequency. Multiple pharmacologic and metabolic factors, as well as spinal and retroperitoneal trauma, appear to alter autonomic regulation of colonic function, resulting in colonic pseudo-obstruction.<sup>1</sup> Surgical patients are most likely to be diagnosed on the third to the fifth postoperative day. In orthogeriatric patients, it is certainly underdiagnosed, but from some retrospective studies, about 1.5% of frail elderly patients have this post-operative complication. The use of patient-controlled analgesia and epidural anesthesia is associated with an earlier development of symptoms. The complication occurs in the same percentage of cases for both hip and knee arthroplasty surgery.<sup>4</sup>

Patients diagnosed with uncomplicated ACPO should be admitted to the hospital in a unit where they can be carefully monitored. Initial management includes nothing by mouth (parenteral nutrition) status and placement of a nasogastric tube to aid in decompression. Patients should be carefully resuscitated with fluid as indicated. Electrolyte abnormalities should be aggressively corrected, as should any other underlying disease exacerbations. Medications that impact colonic motility, such as opiates and anticholinergics, should be discontinued as soon as possible, and it is also recommended to stop laxative medications. Daily laboratory tests and ambulation are recommended as frequently as clinically tolerated. A daily abdominal plain film should be obtained to monitor cecal dilatation. If there is no development of signs of complicated disease and the cecal diameter remains less than 12 cm, this conservative approach should be continued for 72 hours and has a success rate of up to 90%.

Pharmacologic therapy should be initiated for patients who do not improve within 72 hours, have a duration of ACPO greater than 4 days, or develop a cecal diameter greater than 12 cm. Neostigmine is the drug of choice for the treatment of ACPO, and evidence and popularity for its use in uncomplicated disease are quickly increasing. The resolution of disease is defined clinically as the passage of flatus or stool and/or decreasing cecal diameter. The medication is

usually administered as a 2-mg, slow intravenous push over 2 to 5 minutes. Patients should be closely monitored for bradycardia and bronchorrhea with a continuous cardiac monitor during administration and for 30 additional minutes after administration.

Atropine should be available as per Advanced Cardiac Life Support guidelines. A clinical response is typically seen within 2 to 30 minutes of administration. The average efficacy after one dose of neostigmine in randomized controlled trials is approximately 90%, with most non-responders having a resolution of disease after a second 2-mg dose, which can be given 90 minutes to 3 hours after the first. A 24-hour neostigmine drip regimen has also been evaluated, with a reported success rate of 85% and fewer reported adverse effects. After an initial response to neostigmine, patients should continue to be monitored, as approximately 30% are at risk of cecal dilatation recurrence. There is evidence that oral administration of polyethylene glycol immediately after the neostigmine response prevents this.

Patients who have contraindications to or fail pharmacological therapy should be evaluated for endoscopic decompression with the placement of a nontraumatic, large-diameter soft catheter rectal tube.<sup>7</sup> The procedure is considered technically difficult, and success rates are directly related to operator experience. There is an approximately 3% risk of iatrogenic perforation. Tsirlina *et al.* retrospectively compared colonoscopic decompression with neostigmine administration for ACPO and noted that of a total of 77 patients, 46 had one colonoscopy and 6 had two colonoscopies, while 22 patients had one neostigmine administration, 14 had two doses, and 8 patients had multiple doses of neostigmine. The clinical response after one colonoscopy was significantly more effective than either 1 or 2 doses of neostigmine (75% versus 35% or 56%). However, it should be noted that colonoscopy requires specific expertise, higher costs, and more time than neostigmine administration.<sup>1</sup> The risk-benefit ratio of biopsy indications should be established in each patient. Hopefully, this aspect will be assessed in prospective studies that will take into account the continuous evolution of laparoscopic-assisted and endoscopic full-thickness biopsy techniques and the yield of standardized methodologies, which should be applied in histological examination.<sup>8</sup>

Traditional operative management is necessary when the interventions above are unsuccessful or when there is the development of bowel ischemia or perforation. Mortality rates increase substantially in ACPO when operative management is needed.<sup>9,10</sup>

## Conclusions

Ogilvie's syndrome is therefore a typical syndrome of the orthogeriatric patient, in particular for frail elderly people who must undergo major orthopedic surgery. It is equally prevalent after total hip and total knee arthroplasties. Most patients who have ACPO have risk factors that could be identified preoperatively. Knowledge of these risk factors (non-operative trauma, severe infection, admission for cardiovascular disease, immobilization, polypharmacy, drugs, and disionies) can enable the physician to anticipate which patients may develop Ogilvie's syndrome and,

therefore, to be vigilant for its development and judicious in the use of some drugs for pain (patient-controlled analgesia, epidural anesthesia, and opiates).<sup>11</sup>

Ogilvie's syndrome is a pathology that affects geriatric patients and, therefore, requires a multidisciplinary approach, not only surgical but also geriatric and gastroenterological. Inspecting the frail elderly before surgery could reduce the use of epidural anesthesia and modify the orthopedic and anesthesiological approach where possible. Furthermore, rapid diagnosis with optimal follow-up on cecal diameter could reduce mortality related to this syndrome.

Other studies are necessary to identify other risk factors and other drugs that could increase the incidence of this syndrome. Moreover, it would be useful to evaluate whether the use of comprehensive geriatric assessment can improve the identification of these patients.

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