CASE REPORT

Undiagnosed hypothyroidism presenting with sigmoid volvulus

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Abstract
The incidence of hypothyroidism presenting with sigmoid volvulus, a phenomenon known as myxedema pseudovolvulus, is exceedingly rare. A male in his late thirties presented to our institution with a chief complaint of abdominal pain. The patient underwent CT scan, which was consistent with massive colonic dilatation with sigmoid volvulus. He was taken to the operating room for exploration and was found to have sigmoid volvulus and underwent a segmental resection. Postoperatively, the patient was newly diagnosed with severe hypothyroidism.

INTRODUCTION
Colonic volvulus ranks as the third most common cause of large-bowel obstruction in the USA following cancer and diverticulitis. It is estimated that volvulus is responsible for ~5% of all cases of intestinal obstructions and 10–15% of large-bowel obstructions. The sigmoid colon (80%) is the most common site of large-bowel torsion followed by the cecum (15%), transverse colon (3%), and the splenic flexure (2%) [1]. Additionally, hypothyroidism is extremely prevalent in the US population, affecting an estimated 4.6% of the general population [2]. These two diseases can present together. Severe hypothyroidism presenting with colonic dilation is known as myxedema pseudovolvulus. It is exceedingly rare and has only been described in small case series in literature [3–6]. Here, we present such a case.

CASE REPORT
A male in his late thirties presented to our institution with a chief complaint of abdominal pain. The patient reported 3 days of worsening, generalized abdominal pain with constipation that had progressed to obstipation. The patient also admitted to increased lethargy over the past 6 months. He denied nausea, vomiting, depressed mood and any other psychiatric or neurologic complaints. Past medical history was significant for gastrointestinal reflux and chronic constipation. The patient denied taking any medications regularly, and his social and family histories were non-contributory.

On presentation, the patient had blood work drawn with the following results: WBC count was 5.1k/μl, hemoglobin 9.6 g/dl, hematocrit 28.2%, platelet count 167k/μl, total bilirubin 1.0 mg/dl, direct bilirubin 0.3 mg/dl, AST 95 IU/l, ALT 87 IU/l, alkaline phosphatase 64 IU/l, GGT 28 IU/l, LDH 377 IU/l, amylase 55 U/l, lipase 27 U/l and lactate 2.0 mmol/l.

The patient’s chest X-ray showed gaseous distention of the colon prompting further investigation. He was then sent for CT scan of his abdomen, revealing distention of the colon with swirling of mesentery in the left lower abdomen, and superior displacement of the sigmoid colon consistent with sigmoid volvulus (Fig. 1).

The patient was then taken emergently to the operating room for decompression and exploration. Intraoperatively, there was a
finding of a large dilated sigmoid colon with point of torsion at a
dense adhesion of the colon with small bowel mesentery. The
colic diameter was >10 cm with collapse of the proximal and
distal segments. Colonic ischaemia was present prior to untwist-
ing the volvulus. Following detorsion, warm soaked laparotomy
pads were applied to the affected sigmoid colon; however, there
were no signs of reperfusion. As a result, the patient then under-
went a sigmoid resection with primary anastomosis of the des-
cending colon and the rectum. The resected specimen can be
seen in Fig. 2. No other intraoperative abnormalities were
found. Post-operatively, the patient’s diet was slowly advanced
with the return of normal bowel function on the third
postoperative day. As part of an evaluation to the cause of the pa-
tient’s chronic constipation, a thyroid panel was sent with the
following results: TSH >150 mc/ml, Free T3: <0.2 pg/ml, Free T4:
0.12 ng/dl.

The patient was newly diagnosed with hypothyroidism and
was started on thyroid hormone replacement therapy using
levothyroxine sodium. The patient had an uncomplicated
hospital course during which lethargy improved. The patient
was sent home tolerating a regular diet, having regular bowel
movements, and was prescribed continuing thyroid hormone
replacement. The final histopathology on the surgically resected
specimen revealed benign colonic mucosa with edema and
lymphoid aggregates along with diverticulosis coli.

**DISCUSSION**

Hypothyroidism is an extremely common diagnosis in the US
population. It can present with a number of nonspecific symp-
toms which, when taken as a whole, can help reveal the diagno-
sis. Among those common complaints are constipation and
vague abdominal pain. If hypothyroidism progresses without
diagnosis, colonic manifestations, such as pseudo-obstruction
secondary to hypothyroid myxedema, can be the presenting
diagnosis. Though this phenomenon is exceedingly rare, with
only a small number of case reports describing its prevalence,
admitting physicians should consider hypothyroid myxedema
in patients presenting with megacolon and colonic pseudo-
obstruction.

The pathology and pathophysiology in this and similar cases
are unique to the disorder. The megacolon caused by decreased
peristalsis and increased edema secondary to deposition of
hydrophilic glycoproteins in the colonic wall [3]. It has been
described in prior cases that on gross examination, a thickened
colon with lost elasticity was identified. On further microscopic
examination of these specimens, myxedematous and lympho-
cytic infiltration of the stroma and submucosa was noted. This
infiltrate, coupled with the loss of elasticity, is thought to mech-
anically alter impulse transmission at the myoneural junctions
of the colon leading to ileus and eventual megacolon [3–5].

If identified early, thyroid replacement therapy usually leads
to resolution of the patient’s colonic symptoms [4–6]. Once hypo-
thyroidism is the presumed cause of abdominal symptoms, these
patients should be tested and hormone replacement therapy
should be started immediately. However, if the patient’s symp-
toms are not recognized early, they can progress to true sigmoid
volvulus. Once volvulus occurs, it can quickly become a surgical
emergency requiring acute intervention, as was the case with our
patient.

A clinician examining a patient presenting similarly to ours
should always have hypothyroidism in their mind as a possible
underlying etiology of the pseudo-obstruction. If there is a high
clinical suspicion for hypothyroidism based on other symptoms
reported by the patient, a thyroid stimulating hormone level
should be ordered. If hypothyroidism is confirmed, the patient
can be started on hormone replacement and closely followed to
ideally prevent a trip to the operating room. However, if clinically
the patient deteriorates, the patient should be urgently taken to
surgery. This raises the question of routine thyroid testing in pa-
tients with colonic distension that could lead to volvulus. Though
myxedema pseudovolvulus is rare, TSH screening is cheap and
efficient in ruling out an etiology that can be treated nonsurgi-
cally. The main determinant for testing in these cases should

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**Figure 1:** CT scan findings showing significant sigmoid colonic dilatation with concerns for sigmoid volvulus.

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**Figure 2:** Colonic specimen following resection.
be the presence of other symptoms in the hypothyroid constellation such as chronic fatigue, depression, or hair loss.

Myxedema pseudovolvulus is a rare late complication of undiagnosed hypothyroidism. Patients can present with sigmoid volvulus, a surgical emergency. It should be suspected as a possible differential diagnosis in patients presenting with years of chronic constipation, lethargy, and possible prior history of megacolon or pseudo-obstruction. The patient’s clinical picture guides surgical management; however, all of these patients should be started on hormone replacement therapy after being diagnosed with hypothyroidism. We believe that prompt diagnosis and a high level of suspicion can lead to successful nonoperative treatment of patients who present with colonic dilation secondary to hypothyroidism.

CONFLICT OF INTEREST STATEMENT
None declared.

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