Ogilvie’s Syndrome in a Patient at 23 Weeks of Pregnancy: Report of a Rare Case with Successful Surgical Intervention

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Patient: Female, 30-year-old
Final Diagnosis: Acute colonic pseudo-obstruction (Ogilvie’s syndrome)
Symptoms: Abdomen distension • abdominal discomfort, nausea and vomiting • abdominal pain • tarry stool • tenderness in the abdomen
Clinical Procedure: Appendectomy • cecostomy • diagnostic gastroscopy • laparotomy
Specialty: Obstetrics and Gynecology • Surgery

Objective: Rare disease
Background: Ogilvie’s syndrome (acute colonic pseudo-obstruction) is a syndrome characterized by symptoms suggestive of intestinal obstruction without an identifiable mechanical cause. It presents with excessive dilation of the loops of the large intestine. The treatment options include conservative management, endoscopic methods, and surgical intervention. If appropriate treatment is not implemented promptly, this syndrome can lead to life-threatening complications for the patient. Acute colonic pseudo-obstruction typically occurs in elderly individuals with numerous chronic diseases, extensive surgeries, or trauma. In younger individuals, risk factors include gynecological procedures, pregnancy, and childbirth.

Case Report: This work presents a case of a 30-year-old woman at 23 weeks of pregnancy. She presented with persistent abdominal pain, nausea, and vomiting for several days. The patient was initially treated at the Obstetrics Clinic, where conservative management was implemented. Due to worsening symptoms after confirming pathological distension of the colon in the magnetic resonance imaging examination, she was transferred to the surgery clinic. Due to her unstable general condition and lack of improvement with conservative treatment, she was qualified for an appendectomy with the formation of a cecostomy. The performed surgical treatment led to an improvement in the patient’s condition and did not have a negative impact on the further development of the child.

Conclusions: Ogilvie’s syndrome in pregnancy is an extremely rare condition that can lead to significant complications. Its treatment requires the coordinated efforts of a multidisciplinary team of specialists. During the course of therapy, it is important to consider the limitations imposed by pregnancy on diagnostic and therapeutic methods.

Keywords: Colonic Pseudo-Obstruction • Colorectal Surgery • Critical Care • Gynecology • Pregnancy Complications

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Background

Ogilvie’s syndrome, also known as acute colonic pseudo-obstruction (ACPO), is a rare condition characterized by excessive dilation of the large intestine in the absence of mechanical obstruction or inflammatory processes, resulting from impaired contractile function of the intestinal loops. The disease can affect individual segments of the intestine or involve the entire length of the large intestine. The dilation of the intestinal loops most commonly affects the proximal colon and the transverse colon [1]. The most frequently observed symptoms include abdominal distension, abdominal pain, nausea, and vomiting, with the cessation of bowel movements and gas passage [1]. In the absence of appropriate diagnosis and prompt intervention, the disease can progress rapidly, leading to intestinal ischemia and perforation of its wall. The estimated incidence of Ogilvie’s syndrome is approximately 100 cases per 100,000 hospitalized individuals [2]. The mortality rate for cases with timely implementation of appropriate therapy is 15%, which increases to 36% if perforation occurs [3]. This syndrome is typically observed in patients in a severe general condition, after major surgeries, in advanced age, and those burdened with numerous comorbidities [4]. In the case of young individuals, the described risk factors include pregnancy and cesarean delivery. During the preparation of this article, a literature review was conducted regarding the occurrence of ACPO during pregnancy and the peripartum period. Searches were performed in PubMed, ResearchGate, and Scopus databases. Two search phrases used were: (1) “Ogilvie syndrome AND (pregnancy)” and (2) “acute colonic pseudo-obstruction AND (pregnancy)”. Due to the rarity of the disease, the publication period of the studies covered the years 1975-2023. Furthermore, the reference lists of each analyzed article were examined and utilized to enhance the information presented in this publication. A total of 107 and 44 results were obtained for the provided queries of the first and second search phrases, respectively. After verifying the retrieved articles for relevance to the topic, 73 and 40 papers, respectively, were included for further analysis. For the first search phrase, out of the 73 papers, 51 (70%) were related to Ogilvie’s syndrome in the postpartum period in connection with the conclusion of pregnancy through cesarean section. In the case of the second search phrase, 25 out of 40 (62%) papers were related to Ogilvie’s syndrome. The remaining papers regarding ACPO in the antepartum period underwent further detailed analysis.

In the article by Tempfer et al on the occurrence of ACPO in patients undergoing gynecological or obstetric treatment, encompassing a review of 49 case reports and 10 case series descriptions among 93 patients, 76 were pregnant. Among them, ACPO occurred in 66 cases related to cesarean section, and in 10 cases it occurred during pregnancy or postpartum after vaginal delivery [5]. The course and treatment outcomes were described for 59 individuals. In 37% of patients included in the study, conservative treatment was employed as the first-line treatment, while 34% underwent surgical treatment, 20% underwent endoscopic decompression of the intestine, and 7% had attempted treatment with intravenous neostigmine. Positive effects from the chosen first-line treatment method were observed in 37% of patients. Hemicolectomy was the most common approach in case of failure of the initial treatment [5].

In the next study, written by Reeves et al, concerning acute colonic pseudo-obstruction in pregnancy, which was a retrospective study including all pregnant women who gave birth at a single center (Christchurch Women’s Hospital, New Zealand), a total of 10,240 women were included in the study [6]. In this group, 7 cases of ACPO were identified (0.07%), with 2 patients requiring surgical treatment, and successful conservative treatment was applied to 5 patients [6].

A study describing 400 cases of acute colonic pseudo-obstruction, 39 cases involved patients from gynecology or obstetrics departments, and 16 cases occurred after cesarean section [3].

The present article presents a rare case of a young pregnant woman in whom ACPO required surgical treatment. Based on the search results, it can be inferred that ACPO is a rare, particularly cases involving pregnant individuals prior to childbirth. Consequently, this study could make a valuable contribution to understanding this phenomenon.

Case Report

A 30-year-old patient at 23 weeks of pregnancy was transferred to the Department of Obstetrics and Pregnancy Pathology of the clinical hospital on August 18, 2020, from a lower-level referral hospital where she was diagnosed with persistent nausea and vomiting for 3 days. This was her first pregnancy. In her medical history, there were 5 episodes of short-term hospitalizations at the Department of Obstetrics due to episodes of persistent nausea. During these stays, follow-up examinations were conducted, fetal well-being was monitored, and the patient was kept under observation, without indications for longer hospital treatment. She had a history of long-term pharmacological treatment for epilepsy, mild intellectual disability, and hypothyroidism. In 2019, she underwent surgical treatment at the same clinical hospital for achalasia of the cardia, including Heller cardiomyotomy and Dor fundoplication.

During her stay in the Department of Obstetrics and Pregnancy Pathology, she reported generalized abdominal pain. During the physical examination, abdominal distension and moderate tenderness were observed, more pronounced in the lower abdomen and with increased depth of palpation. No signs
of peritoneal irritation were observed, and her general condition remained stable. Due to high inflammatory parameters and suspected urinary tract infection, empirical antibiotic therapy with intravenous ceftriaxone at a dose of 1g every 8 h was initiated. A limited ultrasound was performed to assess fetal well-being, revealing a single live fetus, a normal amount of amniotic fluid, and a placenta on the posterior uterine wall without signs of detachment. The examination was extended to a full fetal anatomy assessment, which showed no abnormalities. Due to persistent gastrointestinal symptoms, abdominal magnetic resonance imaging (MRI) was performed on August 19, 2020. The imaging revealed dilated loops of the colon and sigmoid colon with a maximum width of 9 cm, presence of fluid-gas levels, but no apparent cause for the reported symptoms (Figures 1, 2).

The patient passed tarry stools, raising suspicion of upper gastrointestinal bleeding. An urgent gastroscopy was performed, which did not reveal active bleeding. There was a rapid deterioration in the patient’s clinical condition, with a significant increase in inflammatory parameters, and she began to show symptoms of septic shock. At the same time, there was an exacerbation of abdominal pain. Due to the severe condition of the patient, after careful analysis of the potential risks for both the mother and the child, and the anticipated benefits for the patient, the antimicrobial and antifungal treatment was expanded. Intravenous Meropenem was started at a dose of 500 mg administered 3 times a day, Vancomycin at a dose of 1 g every 12 h, and Fluconazole at a dose of 500 mg per day. After an urgent surgical consultation, the patient was transferred to the general surgery clinic and qualified for surgical treatment.

The surgery was performed on August 20, 2020. It started with a midline laparotomy, and a moderate amount of serous fluid was found in the abdominal cavity. The large intestine was dilated with a diameter exceeding 10 cm, and several areas of the serosal membrane were damaged due to the increased circumference of the intestine. The ruptures were sutured surgically. Examination of the organs in the abdominal cavity did not reveal any visible cause of the disease. Appendectomy was performed, and a cecostomy was created. Safety drains were left in place. Intraoperatively, a diagnosis of acute intestinal pseudo-obstruction was made. Due to symptoms of respiratory insufficiency after the operation, the patient was transferred to the hospital’s Intensive Care Unit (Figures 3, 4).

The patient remained intubated and mechanically ventilated in sedation for 2 days in the Intensive Care Unit. The cardiovascular system remained stable, and enteral and parenteral nutrition were initiated. Antibiotic therapy was continued due to persistently elevated inflammatory markers. After improvement in the general condition, she was transferred to the Department of Surgery, where she stayed until August 31. Subsequently, she was transferred to the obstetrics ward of a lower-level referral hospital in the same city. At 37 weeks of pregnancy, she delivered a healthy baby. In November 2021, a successful procedure was performed to restore the continuity of the gastrointestinal tract and release the adhesions. Currently, the treatment has been completed, and she does not require any further surgical interventions. She remains under the care of her family doctor.

Figure 1. In the abdominal MRI of the patient, enlarged loops of the colon (green arrow) and a single fetus in the uterine cavity (red arrow) are visible.

Figure 2. Dilated loops of the large intestine (red stars) with visible fluid (blue arrow) and gas (orange arrow) levels.
ACPO, also known as Ogilvie’s syndrome, was first described in the British Medical Journal (BMJ) in 1948 by Sir William Heneage Ogilvie [7]. The mechanism leading to the observed distension of the large bowel in this condition remains unknown, but there are theories suggesting its possible pathophysiology. Research on the cause of this syndrome is ongoing, using animal models and analyzing postoperative specimens from patients who underwent surgery for its complications. Comparisons of imaging abnormalities among individual patients also provide valuable information [8]. The etiology of ACPO is believed to be multifactorial and associated with a disturbance in the functioning of the autonomic enteric nervous system. The imbalance in the autonomic nervous system’s influence on intestinal function results from excessive sympathetic activity or inhibition of the parasympathetic component, ultimately leading to hypotonia of the intestine. This phenomenon has been observed in procedures and surgeries involving the pelvic region and is associated with significant pain stimuli, such as childbirth or extensive pelvic surgeries [11]. The therapeutic success of neostigmine, which increases parasympathetic activity in the colon, also supports the influence of inadequate parasympathetic stimulation in the etiology of ACPO [12-14].

However, some authors suggest a dominant role of the sympathetic system in the development of ACPO, supported by the positive impact of epidural anesthesia and vagal nerve blockade on symptom reduction [11]. Another possible cause discussed in scientific research is a dysfunction or reduced quantity of Cajal cells involved in generating and conducting intestinal peristaltic movements. A study conducted by Jain et al demonstrated a lack of these cells in histopathological specimens of intestines obtained from individuals with ACPO [15].

Other proposed theories regarding the pathophysiology of acute colonic pseudo-obstruction include the vascular theory, focusing on reduced intestinal perfusion; the hormonal theory, suggesting a disturbance in the stimulating effect of prostaglandin E on the muscular layer of the colon; and a theory linking ACPO to the use and effects of neurotropic drugs, opioids, antidepressants, and medications used in the treatment of Parkinson’s disease [11,16].

Our patient had been on long-term treatment with valproic acid and oxcarbazepine, and their administration was maintained due to the high risk associated with abrupt discontinuation or alteration of medications during an ongoing pregnancy. The impact of tricyclic antidepressants and phe-nothiazine-derived antipsychotic drugs on the development of ACPO has been discussed [11]. However, the literature lacks detailed data regarding the influence of central nervous system disorders (including epilepsy) and the drugs used to treat them on the risk of Ogilvie’s syndrome development, particularly in pregnant women. This is an issue that requires further research, which is complicated by the low frequency of ACPO occurrence.

**Discussion**

- **Figure 3.** Image during surgery. Significant dilation of the large intestine above 10 cm visible. Current serosal membrane damage present (black arrow).

- **Figure 4.** Dilatation of the loops of the large intestine from the splenic flexure to the sigmoid colon. Multiple ruptures of the serosal membrane are present (black arrows).
Additionally, as one of the potential causes of ACPO, hypothyroidism has been described. Abbasi et al described 2 patients with hypothyroidism exhibiting symptoms of acute colonic pseudo-obstruction. These symptoms completely subsided after implementation of appropriate hormone supplementation [17]. A case of thyroid storm presenting as acute colonic pseudo-obstruction has also been described [18]. Our patient, due to diagnosed hypothyroidism, was receiving thyroid hormone supplementation with satisfactory therapeutic effect. However, it is important to consider the increased hormone demand during pregnancy and the possibility of non-compliance with endocrinologist’s recommendations, including medication dosages. Therefore, thyroid hypofunction cannot be excluded as a contributing factor to the occurrence of Ogilvie’s syndrome symptoms in our patient.

The initial diagnosis of ACPO is primarily based on clinical symptoms. Patients commonly present with nausea, vomiting, cessation of bowel movements and flatus, and abdominal distension. Fever may also be present. Although most patients exhibit symptoms suggestive of obstruction, some may experience diarrhea during the course of the disease [4,9]. The diagnosis of acute colonic pseudo-obstruction can be made after excluding mechanical obstruction and other conditions that cause pathological dilation of the colon, including toxic megacolon associated with Clostridium difficile infection [19].

In the initial diagnostic workup of ACPO, a plain chest and abdominal X-ray in the upright position play an important role. These examinations can reveal dilated intestinal loops with fluid-gas levels suggestive of gastrointestinal obstruction and the presence of free air under the diaphragm, indicating possible gastrointestinal perforation [20]. The next step in the diagnosis should be performing an enema with water-soluble contrast or abdominal and pelvic computed tomography (CT) with intravenous contrast. Both imaging modalities have high efficacy in diagnosing ACPO [8,21,22]. CT imaging allows for a more precise assessment of the degree of colonic dilation [23].

Laboratory tests do not play a crucial role in the diagnosis of Ogilvie’s syndrome itself, but knowledge of the results can be helpful in conservative management, where one of the actions is to correct metabolic and water-electrolyte disturbances. Furthermore, these interventions increase the chances of pharmacological treatment effectiveness [12,24]. Increased levels of white blood cells, C-reactive protein, and lactate may indicate the presence of perforation, ischemia of the intestinal loops, or the development of septic shock. Monitoring these parameters facilitates the timely implementation of appropriate treatment in the event of such conditions [4].

Although the precise pathophysiological cause of ACPO has not been definitively identified, certain diseases and situations have been found to increase the risk of its occurrence. Most ACPO cases are associated with a recent severe illness or injury, often affecting older individuals who have undergone prolonged hospitalization or reside in long-term care facilities [25]. These individuals often have multiple comorbidities, typically including chronic neurological or orthopedic conditions [26]. The predominant cause of this condition is recent major abdominal and extra-abdominal surgeries.

Other diseases that increase the likelihood of ACPO include cardiovascular diseases, metabolic disorders, systemic lupus erythematosus, hemalogic malignancies, and systemic infections [27]. Furthermore, pregnancy and recent cesarean section delivery also increase the risk of developing Ogilvie’s syndrome [27].

The cornerstone of ACPO treatment is conservative management, with endoscopic treatment and surgical intervention reserved for cases where conservative measures fail. In the event of suspected or confirmed bowel perforation or ischemia, urgent surgical intervention is necessary. In conservative treatment, obtaining a detailed medical history regarding chronic illnesses and medications taken by the patient is crucial. This type of therapy can be initiated if the diameter of the intestine is below 12 cm, the patient has adequate circulatory and respiratory function, and there are no signs of peritoneal irritation on examination [28]. It is important to discontinue or reduce the dosage of medications that can inhibit peristalsis, including opioid medications. Maintaining appropriate fluid balance, correcting metabolic disturbances and electrolyte imbalances, restricting oral food intake, and decompressing the gastrointestinal tract through nasogastric tube placement are essential. A conservative treatment trial should be conducted for 48-72 h, provided the patient remains stable. Among pharmacological treatment options, intravenous administration of neostigmine at a dose of 2 mg given as a bolus appears to be the most promising. A study by Ponec et al demonstrated a 91% success rate of neostigmine compared to placebo [29]. In a study by Smedley et al, continuous neostigmine infusion resulted in greater reduction in intestinal diameter compared to bolus administration [30]. However, further research is needed to determine the superiority of one administration method over the other.

If conservative and pharmacological treatment fail, endoscopic intervention should be considered. Endoscopic decompression of the colon using minimal insufflation is recommended [25]. Placement of a large-diameter flexible stent in the right half of the colon is preferred. The procedure is technically demanding and should be performed by an experienced endoscopist, as there is a risk of bowel wall perforation [9]. The literature estimates the effectiveness of endoscopic intervention to be 61-95% [30].
If conservative, pharmacological, and endoscopic treatments do not achieve the desired results in terms of resolution of symptoms suggestive of intestinal obstruction and reduction in the diameter of the large intestine, surgical treatment is implemented [9,25]. As mentioned above, it is also used in cases of acute complications of Ogilvie’s syndrome and significant deterioration of the patient’s condition. The mortality rate associated with surgical intervention can be as high as 30-44%, especially in patients with bowel perforation or ischemia [25]. The scope of the surgical procedure may include ileostomy, colostomy, or cecectomy formation, segmental resection of the large intestine, surgical placement of a decompressive drain into the intestine, or total or subtotal colectomy [4,11,30]. The extent of the surgery should be tailored individually to each case and the intraoperative condition of the intestinal loops.

In the presented case, surgical treatment was the chosen approach. Conservative or endoscopic treatment options were abandoned due to the sudden deterioration in the patient’s overall condition, increasing abdominal pain, rising inflammatory markers, and vital signs indicating development of septic shock. Additionally, arterial blood gas analysis revealed metabolic acidosis. The circumstances presented strongly indicated the possibility of gastrointestinal perforation. According to the American Society of Colon and Rectal Surgeons Clinical Guidelines, non-operative treatment attempts should be considered for hemodynamically stable patients without signs suggesting imminent or actual bowel perforation or ischemia, without a sudden surge in inflammatory markers, and without escalating pain symptoms [28]. In our assessment, surgical treatment for our patient carried the lowest risk for both the mother and fetus and was associated with the highest likelihood of improving the patient’s overall condition.

Despite ACPO typically occurring in older individuals with multiple chronic diseases, in younger patients, gynecological and obstetric procedures, as well as pregnancy, especially those concluded with a cesarean section, increase the risk of its occurrence. In a study conducted by Reeves et al on a group of 10,240 patients, the frequency of ACPO in the postpartum period was estimated to be 1 case per 1500 births [6]. A higher incidence is observed in pregnancies with complications, such as placenta previa, while ACPO is rarely observed in normal pregnancies. During gynecological procedures, interruption of the innervation of the distal part of the colon may occur [6]. In pregnant women, the suggested mechanism is the compression of the autonomicplexuses by the gravid uterus [6]. Additionally, during pregnancy, there is increased stimulation from the autonomic nervous system, along with reduced activity of neurotransmitters that stimulate peristalsis, such as acetylcholine, and increased activity of inhibitory substances [5]. During imaging diagnostics of acute pseudo-obstruction of the colon in pregnant women, it is recommended to avoid performing a CT scan unless the expected benefits for the patient significantly outweigh the risks. The lowest possible radiation dose should be used [6]. The teratogenic dose is estimated to be 5-15 rads [31]. MRI is increasingly being used in pregnant women, and no harmful effects of this type of examination on fetal development have been demonstrated. If antibiotic treatment is necessary, a substance with the best-documented lack of negative impact on pregnancy and fetal development should be used, and the medication should be administered at the lowest effective dose.

Conclusions

Although ACPO rarely occurs during pregnancy and the peripartum period, when it does occur, it poses significant risks to the health and lives of both the pregnant woman and the fetus. This condition presents a challenge for medical personnel, as prompt diagnosis and timely initiation of intensive treatment are typically required. A multidisciplinary team of specialists, including obstetricians, surgeons, radiologists, and neonatologists, should be involved in the treatment process. Continuous monitoring of vital parameters for both the pregnant woman and the fetus is necessary. Therapeutic decisions must take into account the limitations of diagnostic methods and pharmacological treatment due to pregnancy. Conservative treatment is the preferred approach, with endoscopic methods considered if conservative measures fail. In case of treatment failure or life-threatening complications such as bowel perforation or ischemia, surgical intervention should be considered. The surgical procedure should be minimized to the smallest extent necessary to effectively alleviate the symptoms of Ogilvie’s syndrome.

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