

**ACUTE MESENTRIC VENOUS THROMBOSIS IN A PREGNANT WOMAN AT THE  
SPECIAL HOSPITAL FOR GYNECOLOGY AND OBSTETRICS "MOTHER TERESA" IN  
CAIR – SKOPJE**

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**Abstract**

Mesenteric venous thrombosis is a blood clot in one or more of the main veins that squeeze blood from the intestine. Superior mesenterine vein is most commonly involved in the process.

The appearance of MVT is usually rare. The aim of this study is to identify the incidence and obstetric risk factors. This study will analyse a pregnant woman who appeared with an MVT in the 30<sup>th</sup> gestational week. A 33-year-old primigravid woman was admitted to the Special Hospital for Gynecology and Obstetrics "Mother Teresa" in Cair, Skopje during the 35<sup>th</sup> week of pregnancy. The second day after admission, she complained of more intense abdominal pain, anorexia, vomiting and abdominal dystency that were disproportionate to physical signs. The entire ileum, part of the yeunum and part of the ascendant colon were gangrenose, and thromboembolism was discovered in the corresponding mesenteric veins. Histopathological analysis also revealed extensive edema, hemorrhagic, inflammatory infiltration and necrosis in the resected intestine and widespread thrombosis in mesenteric venous lumens.

Although MVT diagnosis during pregnancy is difficult due to its small incidence and uncharacteristic symptoms, signs and laboratory results, MVT is often the main cause of severe abdominal pain during pregnancy and should be included in the differential diagnosis of pregnant women with acute abdominal pain.

**Keywords:** Mesenteric venous thrombosis, abdominal pain, pregnancy

**Introduction**

Mesenteric venous thrombosis (MVT) is an unusual cause of mesenteric ischemia, which covers 5–15% of the cases. It was first described as a special cause of mesenteric ischemia from Warren and Eberhardt. The causes of MVT can be prothrombotic conditions, trauma and intraabdominal infections. Progress in radiological techniques and anticoagulation has led to improved diagnosis and results[1].

Mesenteric ischemia is caused by blood flow that is insufficient to meet the metabolic requirements of visceral organs [2]. The weight of ischemia and the type of affected organs depend on the affected vessel and the degree of collateral blood flow.

Despite advances in techniques used to treat mesenteric circulation problems, the most critical factor affecting outcomes in patients with this condition continues to be the rate of diagnosis and intervention [3]. Although mesenteric ischemia is an unusual cause of abdominal pain, it is less than 1 in every 1,000 hospital admissions. Anethnooratic or delayed diagnosis can result in severe complications. With the death rate in patients in whom this condition is acute, it is 60–80% [4].

*Types of mesenteric ischemia*

Arterial obstruction, which is the most common cause of mesenteric ischemia, has both acute and chronic forms. It is associated with embolic occlusion in 40 to 50% of the cases, with thrombotic occlusion of a previously stenotic mesenteric vessel in 20 to 35% of cases, 4 and dissection or inflammation of the

artery in less than 5% of the cases [5]. More than 90% of cases with chronic mesenteric ischemia are associated with a progressive atherosclerotic disease that affects the origin of visceral vessels. Treatment in such cases focuses on selective revascularization to avoid the risk of complications and death associated with the development of acute ischemia

### *Mesenteric circulation*

Venous drainage of the intestine follows the same scheme as arterial circulation. The upper mesenteric vein drains the entire intestine from the second part of the duodenum to approximately the right two-thirds of the transverse colon [6]. The upper mesenteric vein connects to the inferior vena cava behind the pancreas neck to form the portal vein. Short veins of the stomach that drain the stomach's fundus enter the inferior vena cava.

### *Diagnosis*

Differentiation between ischemia due to MVT is usually common due to mesenteric arterial thrombosis. The first occurs in thrombophilia conditions, while cardiac causes and atrial fibrillation are associated with arterial ischemia. Personal or family history of deep vein thrombosis, which is present in about 17% to 44% of the cases, increases suspicion of diagnosis of MVT. Similarly, the development of ascites in a patient and with acute abdominal pain increases suspicion of MVT [7].

Routine laboratory evaluation is usually not useful for diagnosing MVT. Patients with severe disease and dehydration may show signs of hemoconcentration. Patients with infected small vessels and isolated MVT may have higher platelet counts compared to patients with combined portal and mesenteric vein involvement [8]. This is due to associated thrombophilic conditions in those with small blood vessel disease and isolated MVT. Amylase levels may be elevated by colon ischemia, but levels higher than 1000 U/L indicate acute pancreatitis. Liver enzymes may be up to a moderate degree, especially in patients with thrombosis in the portal vein [9]. Hypoxemia and lactic acidosis are found most often late and predict poor outcomes. Blood cultures should be obtained in patients with high fever, peritoneal signs, hemodynamic instability, and perforation. Paracentesis and crops can be of help because hemorrhagic ascites sometimes develops in some patients.

With routine use of abdominal imaging, during the diagnosis of MVT the outcome is usually non-invasive [10]. Common abdominal radiography usually shows abnormalities in 50% to 75% of cases, with mainly nonspecific findings such as enlarged intestinal gaps, ileus and a thumb print of mucous edema [11].

### *Treatment*

Medical treatment includes general measures and anticoagulation. Pain control, colon rest and fluid and electrolyte replacement should be initiated for patients with acute presentation. Cell transfusion may be required to prevent gastrointestinal bleeding and nasogastric aspiration for patients with abdominal distension. Antibiotics are used for patients with pylephlebitis or septic thrombophlebitis of the mesenteric vein and in patients with superior sepsis due to bacterial translocation from colon attack [12].

Patients with forthcoming transmural heart attack and peritoneal signs are treated with surgery. The sustainability of the colon during surgery is determined by visual inspection, doppler ultrasonography and fluorescein infusion as the most accurate means of detecting bowel sustainability [13]. In some cases, resection and anastomosis with a standard procedure is required in order to preserve as many intestines as possible. After initial resection, operations can be performed within 24 to 48 hours to determine the need for additional resection.

Sometimes it is necessary to consider interventional radiological options for patients at risk of colon attack, but without peritonitis. These are typically patients who have worsening abdominal pain despite 48–72 hours of anticoagulation therapy. Mesenteric vein can be accessed from the transhepatic or transjugular pathway. Data on the use of thrombolytic therapy are limited to such case reports, and small case series often report a high rate of bleeding with thrombolysis [14].

### **Purpose**

The purpose of this study is to determine the diagnosis and treatment of pregnant women with acute mesenteric venous thrombosis.

### **Case report**

A 33-year-old primitive woman, 35 weeks pregnant, was complaining of abdominal pain along with nausea and vomiting for 2 hours.

After her arrival, she had a temperature rate of 38.5°C, a pulse of 83 beats per minute, a breathing frequency of 22 inhalations per minute and blood pressure of 118/70 mmHg. Physical examination showed gravid uterus under the xyphoid process. The sounds of the colon were normal and there were no signs indicating peritonitis. Hematological examination revealed a leukocyte count of  $14.0 \times 10^9/L$  (with normal range  $5.1 \times 10^9/L$  -  $9.0 \times 10^9/L$ ) with neutrophils comprising 72.5% (normal hemoglobin range 60-80 ). Hematocrit of 0.289 (normal range 0.34–0.40) and platelet count of  $187 \times 10^9/L$  (normal range  $100 \times 10^9/L$  -  $400 \times 10^9/L$ ). Obstetric ultrasound revealed a normal fetus compatible with expected gestational age. The fetal monitor showed that the heart rate was fluctuating between 145 and 155 beats per minute and that the uterus was contracting occasionally. A threatened preterm labor was initially suspected and magnesium sulfate was administered to inhibit uterine contractions. Acute gastritis was also considered.

The second day after admission, the patient complained of more intense abdominal pain that was in the left lower quadrant, and experienced increased vomiting and abdominal distension. Physical examination showed sensitivity to the left lower quadrant without rebound sensitivity, distended stomach and weak colon sounds. Hematological tests revealed left-displacement leukocytosis (number of leukocytes of  $24,7 \times 10^9/L$  and neutrophils accounting for 89%) and hemoconcentration (hematocrit of 0.428). Serum amylase was normal. An abdominal ultrasound scan revealed enlargement and outflow of the left intestinal ducts, thickening of the intestinal wall and a small amount of ascitis.

There was suspicion of acute appendicitis with perforation and immediately an urgent research laparotomy was performed. During the study, approximately 1,400 mL of serosanguine peritoneal fluid was found in the abdomen. Part of the jejunum and part of the ascendant colon were gangrenous and thromboembolism was observed in the corresponding mesenteric veins. Surgery showed a white cell count of  $13.87 \times 10^9/L$ , Neutrophils accounted for 81%, hemoglobin 54 g/L, hematocrit 0.146 and platelet count of  $129 \times 10^9/L$ . Pathological examination revealed extensive mucous denudation, edema, hemorrhagic and neutrophilic infiltration in submucosa, muscularis propria of the intestine and widespread thrombosis in the mesenteric venous lumens.

### **Results**

After the examination, a decision was made to perform a research laparotomy on the middle line. Vital signs before receiving general anesthesia showed that blood pressure was 91/50 and pulse of 129/min. There were gangrene loops of the colon and 750 Cc of blood were sucked in. A segment of 2.5 meters of small intestine was resected, 40 cm away from the duodenojejunal coupling and anastomosis was made from one end to another. The baby was born and transferred to the neonatal intensive care department.

The patient post-surgery was transferred to the intensive care unit. The patient had a reasonably uneventful recovery. She and the baby were discharged in the postoperative 35<sup>th</sup> day. Two years later, the patient was pregnant again and underwent thrombophilia testing (at the time, antithrombin III activity was 63% (normal range of 70–110%). The woman gave birth to a healthy baby through caesarean section in the 38<sup>th</sup> gestational week without thromboembolic event and without thromboprophylaxis.

### **Discussion**

MVT is one of the rarest conditions and covers 1 in 5,000 to 15,000 admissions to a hospital. 1 in 1,000 are received in the emergency department and 6 to 9% of all cases are of acute mesenteric ischemia. MVT is most commonly associated with typical components of Virchow's triad: blood flow,

hypercoagulatable pregnancy and endothelial injury [15]. During pregnancy, factors VII, VIII and fibrinogen increase while the activity of the fibrinolytic system is reduced. However, as pregnancy progresses, the enlarged uterus compresses the lower hollow vein [16].

Patients who have abdominal pain sometimes wrongly think they have a peptic ulcer or gastritis. When abdominal pain becomes strong, early symptoms of MVT in a pregnant woman are sometimes misinterpreted as normal pregnancy changes. Laboratory findings such as leukocytosis and elevated hematocrit are not particularly useful for obtaining differential diagnosis.

A common feature of acute MVT is abdominal pain, which is typically described as colic and medium abdominal [11]. Initially, the pain can be mild, but initial physical findings sometimes can be completely normal. Some patients may experience hematochezia, hematemesis or melena [6]. Abdominal signs such as abdominal sensitivity, abdominal distension and ascitis may accompany increased ischemia of the intestine.

At a rate of 1 in every 635 pregnancies, acute abdomen during pregnancy is also caused by obstetrical, non-obstetrical, gynecological and non-gynecological causes which make its treatment challenging [18]. Therefore, relying exclusively on the clinical picture and abdominal examination for the diagnosis of non-obstetric and gynecological cause of acute abdomen in pregnancy is to some extent inconclusive due to physiological changes to pregnancy-related types that may mimic some types of pathology.

### **Conclusion**

Although rare, it should be taken into account that the MVT is dangerous. It is characterized by a sneaky start and early nonspecific clinical presentation, but can progress very quickly. In this case, the diagnosis of MVT and the timely caesarean section provided a more favourable fetal outcome.

Early diagnosis and treatment of acute intestinal necrosis caused by MVT is critical for the survival of both the mother and the fetus. However, not only do the various causes of acute abdomen in pregnancy, early diagnosis of AMI due to MVT remains a challenge, but also a reduced ability to use computer tomography (CT) that remains the gold standard in the diagnosis of MVT [19]. Gastrointestinal lesions should be more often studied in pregnant women with acute abdomen or vague gastrointestinal symptoms.

In conclusion, MVT in pregnancy is rare, but it is still an important cause of intestinal ischemia. Uncharacteristic symptoms, signs and laboratory results lead to an inaccurate or late diagnosis of MVT and high morbidity and mortality of the mother and fetus.

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