

A Rare Cause of Abdominal Pain: Intestinal Angina

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ABSTRACT

Intestinal angina is an uncommon clinical entity causing abdominal pain and having both high mortality and morbidity in terms of its results. Symptoms are about to occur on the base of intestinal hypoperfusion when involving of two or more major splanchnic vessels exists. Sitophobia and loss in weight are the leading clinical presentations. Abdominal computerized tomography angiography, Duplex ultrasound and conventional angiography are the appropriate diagnostic tools for suspected acute intestinal ischemia. Early diagnosis and treatment produce less mortality and morbidity. We aimed to recognize chronic mesenteric ischemia by the case presented here of a 56 year old man who had abdominal pain.

Key words: Abdominal pain, Intestinal anjina

ÖZET

Kronik Karın Ağrısının Ender Bir Nedeni: İntestinal Anjina

İntestinal anjina nadir görülen, karın ağrısına yol açan, sonuçları açısından morbidite ve mortalitesi oldukça yüksek olan bir patolojidir. Semptomlar en az iki veya daha fazla ana splanchnik damar etkilendiğinde ortaya çıkan, intestinal hipoperfüzyondan kaynaklanır. Kilo kaybı ve sitofobi sık karşılaşılan klinik özelliklerdir. Tanıda dublex ultrasonografi, bilgisayarlı tomografi anjiyografi ve konvansiyonel anjiyografi kullanılmakta olup erken tanı ve tedavi mortalite ve morbiditeyi azaltmaktadır. Bu yazıda amacımız acil servise karın ağrısı şikayeti ile başvuran 56 yaşındaki olgu ile kronik mezenter iskemi hatırlamaktır.

Anahtar kelimeler: Karın ağrısı, İntestinal anjina

INTRODUCTION

Chronic abdominal pain may be due to numerous pathologies of the gastrointestinal system or to systemic disease. The pain due to chronic ischemia of splanchnic vessels is the most difficult to distinguish among the other reasons^[1]. Intestinal angina is an uncommon clinical entity causing abdominal pain, and carries both high mortality and morbidity in terms of outcome. Symptoms occur on the base of intestinal hypoperfusion when involvement of two or more major splanchnic vessels exists.

Sitophobia and weight loss are the leading clinical presentations, and patients admit to hospitals recurrently based on the coexistence of the complaints. Conventional angiography as the gold standard, duplex ultrasound and computerized tomography (CT) are the diagnostic tools for suspected acute intestinal ischemia. Because of the high morbidity, patients face potentially life-threatening conditions due to delayed diagnosis. We aimed to facilitate recognition of chronic mesenteric ischemia in patients admitted to emergency services with chronic postprandial abdominal pain.

CASE REPORT

A 56-year-old man suffering from abdominal pain, weakness and nausea was admitted to the emergency department. On admission, his blood pressure was 133/81 mmHg, pulse 83 beats per minute, body temperature 37.5°C and oxygen saturation 97%.

There was a history of abdominal pain of approximately three months' duration and coexistence of some nausea. His pain tended to increase after every food intake and decrease in hunger periods. His pain was in a scraping fashion and until three months before, he had never experienced this type of pain. His past history included a weight loss of 6 kg over 1-2 months. He had three vomiting attacks before admission to our emergency service. He reported numerous consultations with physicians with the same complaints and no benefit from treatments. His current medications included ciprofloxacin, metronidazole and hyoscine-N-butyl bromide.

His past history included appendectomy two years before. He reported smoking on average one pack of cigarettes per day for 30 years. No other pathologic history of the patient was obtained.

Left upper quadrant tenderness and left costovertebral angle tenderness were present on physical examination. No other pathologic results of the physical examination were obtained.

Laboratory findings revealed white blood cell (WBC) $16.9 \times 10^3/\mu\text{L}$, hemoglobin (Hb) 13.3 mg/dL, platelets $388 \times 10^3/\mu\text{L}$, sedimentation rate 25 mm/h, fasting glucose 137 mg/dL, lactate dehydrogenase 208 IU/L, alanine transaminase 14 U/L, aspartate transferase 13 U/L, alkaline phosphatase 69 U/L, amylase 65 U/L, urea 30 mg/dL, creatinine 0.9 mg/dL, sodium 136 mmol/L, potassium 4.37 mmol/L, gamma-glutamyl transpeptidase 18 U/L, CK-MB 8.8 ng/mL, total cholesterol 123 mg/dL, triglyceride 101 mg/dL, high-density lipoprotein (HDL) 35 mg/dL, low-density lipoprotein (LDL) 68 mg/dL, very low density lipoprotein (VLDL) 20 mg/dL, thyroid stimulating hormone 0.557 $\mu\text{IU/mL}$, hemoglobin A1c 6%, and D-dimer 0.24 ng/mL. Parameters of arterial blood gas were within normal limits. ECG revealed normal sinus rhythm (no change in follow-up ECGs). Fecal occult blood test was negative.

Abdominal ultrasound revealed common calcifications of the abdominal aortic wall. A stenotic flow pattern in the superior mesenteric artery (SMA) was obtained, while distally no flow pattern was obtained.

Dynamic CT revealed totally occluded origin of the truncus coeliacus and SMA, 75% stenosis in the origin of the inferior mesenteric artery (IMA) and sufficient flow distally via collateral circulation.

The patient underwent endovascular stenting based on the diagnosis of chronic mesenteric ischemia.

DISCUSSION

Intestinal angina, initially described by Councilman in 1894 and Goodman in 1918, is characterized by weight loss and anorexia accompanying postprandial abdominal pain. Intestinal ischemia, resulting from inadequate oxygen supply and alimentation, depends on recurrent, transient episodes of inadequate intestinal blood flow^[2,3].

The upper gastrointestinal tract is mainly supplied from the celiac artery (CA) and its branches. The middle portion of the gastrointestinal system is supplied from the SMA emerging 1 cm caudally of the CA from the aorta. Middle colic artery, right colic artery, ileocolic artery, and jejunal and ileal arteries are the branches of the SMA. Thus, the SMA serves the jejunum, ileum, ascending colon, transverse colon, and splenic flexura. The IMA emerges 3-5 cm superior to the aortic bifurcation and gives ascending and descending branches. Serving from the splenic flexura to the

superior rectum, the left colic artery and sigmoid and marginal arteries are the branches of the IMA^[1].

Symptoms of intestinal angina may occur when there is involvement of two or more major splanchnic vessels. Intestinal angina, sitophobia and weight loss are the leading clinical presentations. Weight loss presents because patients limit food intake to avoid the pain of abdominal angina. The pain of abdominal angina typically occurs half an hour after a meal and lasts about 1 to 4 hours in the midepigastric and central abdominal region. Patients may also report melena, rectal hemorrhage and changes in bowel habit, usually diarrhea caused by malabsorption (which contributes to loss in weight), or less frequently constipation^[4].

Chronic mesenteric ischemia, a rare but important cause of abdominal pain, forming 5% of intestinal ischemia, causes severe morbidity and mortality. Selective autopsy case series performed in the United States demonstrated stenosis in 30% of patients with abdominal pain^[5].

Chronic abdominal pain may be due to numerous pathologies of the gastrointestinal system or to systemic disease. The pain due to chronic ischemia of splanchnic vessels is the most difficult one to distinguish among the other reasons^[1]. Elderly patients with abdominal pain and weight loss and diagnosed malignancy will undergo multiple diagnostic tests such as endoscopic and contrast studies, which are not diagnostic tools, and thus the diagnosis of chronic mesenteric ischemia is made after considerable delay. Several studies reported 16-18 months of delay. Our case had a history of abdominal pain of about three months accompanying a weight loss of 6 kg in 1-2 months, and numerous admissions to different hospitals with the same complaints resulted in different diagnoses and treatments. With complaints lasting about three months on admittance to our hospital, he was diagnosed with intestinal ischemia.

The incidence of chronic mesenteric ischemia rises with predisposing factors for developing atherosclerosis, such as diabetes, smoking, hypertension and hypercholesterolemia^[5]. In our case, no history of other medical conditions was obtained. Cholesterol and hemoglobin A1c were within normal limits. This patient's smoking history of a pack of cigarettes a day for 30 years is a predisposing factor for developing atherosclerosis and he was in his sixth decade, which is also a risk factor, consistent with the literature.

Of patients with chronic mesenteric ischemia who undergo any therapy, 26-66% are subject to acute ischemia or bowel infarction^[6]. Six percent of patients with asymptomatic severe mesenteric stenosis developed mesenteric ischemia in a mean follow-up period of 2.6 years. Though patients may be asymptomatic, since 86% can develop gastrointestinal symptoms and mesenteric ischemia with possible fatal outcome, these patients should be followed closely^[7].

Selective angiography is considered the gold standard for establishing the diagnosis of chronic mesenteric ischemia; however, its invasiveness and complications due to the contrast limit usage of this technique^[8]. Ultrasonography (USG), which is noninvasive and readily available and can be used in bedside evaluation, allows SMA evaluation; however, sonography is limited to evaluation of the IMA in only 20% of patients because of poor anatomic correlation. Diagnosis of mesenteric ischemia by means of USG is sufficiently accurate in 90% of SMA and 80% of CA involvements^[9].

In addition to its minimal invasiveness, CT angiography has three other advantages compared with conventional angiography in examining patients with suspected ischemia. First, it can visualize structures and organs surrounding arteries; second, it allows 3D image reformatting; and third, it has higher sensitivity and specificity^[10]. CT angiography has high sensitivity and specificity, reported at 96% and 94%, respectively^[11]. Magnetic resonance (MR) angiography, also a noninvasive technique, is similar to CT angiography in its ability to define the main arteries and is roughly 100% sensitive; however, MR angiography is inadequate in visualizing smaller peripheral branches^[12].

In our case, no flow in the SMA could be visualized by means of USG and the other splanchnic vessels could not be evaluated. Thanks to dynamic CT, stenoses and obstructions of the SMA, IMA and truncus coeliacus were clearly shown for confirming the diagnosis.

Anticoagulant, antiaggregant or antispasmodic agents are used in the treatment of mesenteric ischemia due to chronic venous thrombosis^[1]. In the presence of arterial lesions, surgical techniques include by-pass grafting, endarterectomy and endovascular interventions. With its high success rates, lower mortality and morbidity rates and requirement of less hospitalization time, endovascular mesenteric revascularization is being increasingly performed today. Success rate of a metaanalysis formed from seven case

series, performed by Kasirajan et al., was reported as $91 \pm 8\%$ ^[14]. Symptom resolution was $79 \pm 9\%$ in a mean follow-up period of 27 ± 8 months. Complication rate, periprocedural mortality and maintaining radiographic patency were reported as 18%, 4%, and $70 \pm 18\%$, respectively.

In conclusion, abdominal angina is an uncommon and under-recognized entity caused by recurrent episodes of postprandial intestinal ischemia. The diagnosis of symptomatic chronic mesenteric ischemia should be considered in patients presenting with nonspecific abdominal complaints, sitophobia, and weight loss. Mesenteric ischemia should be considered even in patients with chronic abdominal pain with no severe predisposing factors on their arrival to emergency service, since its recognition will facilitate early diagnosis, increase cure possibility via interventional procedures and prevent mortalities secondary to thromboembolism.

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