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Computed tomography findings of mesenteric ischemia related to acute superior mesenteric vein thrombosis: A case report

Akut superior mezenterik ven trombozuna bağlı mezenterik iskeminin bilgisayarlı tomografi bulguları: Olgu sunumu

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Abstract

Acute mesenteric ischemia (AMI) is a condition caused by a decrease in blood flow due to occlusion of the mesenteric vessels, vasospasm or hypoperfusion. Approximately 5-15% of all AMI are related to mesenteric venous thrombosis (MVT). MVT has high mortality rate despite of advanced medical technologies. Thus, early diagnosis is crucial in the prognosis of the disease. Contrast-enhanced computed tomography (CT) and CT angiography are the most helpful radiological examinations for early diagnosis. We present the case of 55 years old patient with AMI accompanied by radiological images. Our patient was admitted to hospital with severe abdominal pain persistent since a week. The patient had upper gastro-intestinal system (GIS) bleeding history due to peptic ulcer a month ago. In the CT imaging, we found thrombosis along superior mesenteric vein up to distal portal junction. There was pneumatosis intestinalis as a consequence of necrosis, ileal walls were concentric, thick and hypodense because of edema. Total intestinal segments were dilated with air-fluid levels. Ileus was present without obstruction. The findings support the diagnosis of AMI due to MVT.

Keywords: Mesenteric ischemia, Venous infarct, Mesenteric venous thrombosis

Öz

Akut mezenterik iskemi (AMI), mezenterik damarların tıkanması, vazospazm veya hipoperfüzyonun kan akışında azalmaya neden olduğu bir durumdur. Tüm AMI'nin yaklaşık% 5-15'i mezenterik venöz tromboz (MVT) ile ilgilidir. MVT, ileri medikal teknolojilere rağmen yüksek ölüm oranına sahiptir. Bu nedenle, hastalığın prognozunda erken tanı önemlidir. Kontrastlı bilgisayarlı tomografi (BT) ve BT anjiyografi erken tanı için en yararlı radyolojik incelemelerdir. Radyolojik görüntüleri olan 55 yaşındaki hastayı sunduk. Hastamız bir hafta boyunca mevcut olan şiddetli karın ağrısı ile hastaneye başvurdu. MVT'yi distal portal kavşağına kadar superior mezenterik ven boyunca izledik. Hasta bir ay önce başka bir hastanede peptik ülsere bağlı olarak üst gastrointestinal sistem kanama öyküsüne sahipti. Nekroz nedeniyle pnömatozis intestinalis vardı, ileal duvarlar konsantrik kalın ve ödem nedeniyle düşüktü. Segmental ileus bu olaya engel olmaksızın eşlik ediyordu. Radyolojik olarak, MVT'nin neden olduğu AMI olarak değerlendirdik.

Anahtar kelimeler: Mezenterik iskemi, Venöz infarkt, Mezenterik venöz tromboz

Introduction

Acute mesenteric ischemia (AMI) is a condition caused by a decrease in blood flow due to occlusion of the mesenteric vessels, vasospasm or hypoperfusion [1]. Most common reasons are arterial. However, AMI can be rarely related to venous problems [2]. Its mortality rate is less than of arterial ischemia but it is remarkable. Delayed diagnosis is very common in mesenteric venous thrombosis. The reason of this is the absence of specific abdominal signs and symptoms. Thus, early diagnosis is crucial in the prognosis of the disease [3]. Advances in radiology have increased rate of early recognition of the disease [4,5]. Consensus has not been yet formed but offers possibilities in non-surgical treatment methods such as anticoagulant treatment [3]. Contrast-enhanced computed tomography (CT) and CT angiography are the most helpful radiological examinations for early diagnosis. The accurate and effective interpretation of these tests led to a significant decrease in mortality and morbidity rates [5]. We present the case of 55 years old female patient with AMI related to venous thrombosis.

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Case presentation

The patient was admitted to hospital with complaint of abdominal pain. In the patient's story, there were peptic ulcer and upper gastro-intestinal system (GIS) bleeding a month ago. No significate signs were found in ultrasound. Only common gas artefacts were present; thus, CT examination was requested. Contrast-enhanced CT revealed thickening up to 1.5 cm in ileal segments and air in the mucosa related to necrosis (pneumatosis intestinalis). In the jejunal segments, air-liquid levels were present because of ileus (Figure 1). Minimal free fluid was monitored in the lower quadrant of the abdomen. Intestinal attenuations were hypodense due to edema. Contrast enhancement was not observed in distended necrotic intestinal segments. CT angiography revealed a filling defect extending to the splenic vein and portal vein junction throughout the superior mesenteric venous pathway. The 3D reconstruction images supported the findings in the conventional CT (Figure 2). The written consent was obtained from the patient presented in the study.

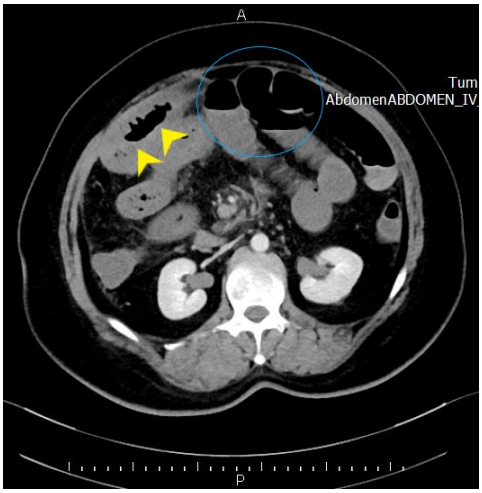

Figure 1: Yellow arrows: concentric thick air inside the necrotic ileal segments, Blue circle: ileus air liquid levels

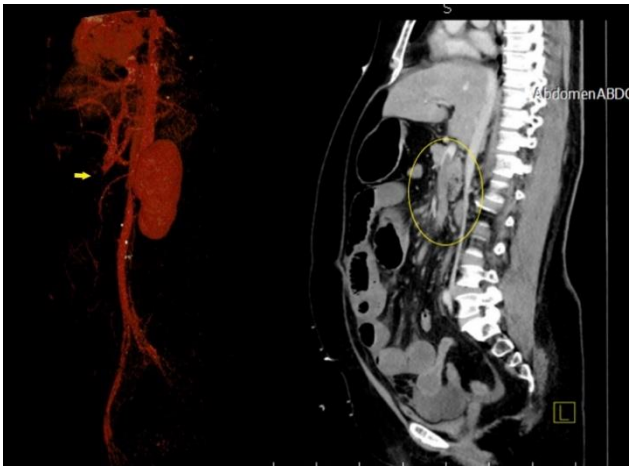

Figure 2: Yellow arrow: defect of superior mesenteric vein yellow ring: thrombosed superior mesenteric vein

Discussion

Mesenteric venous thrombosis (MVT) is the third reason of mesentery ischemia after mesenteric arterial embolism (50%) and mesenteric arterial thrombosis (15–25%) [6]. About 5 to 15% of all intestinal infarctions is related to MVT [2]. Delayed diagnosis in MVT can lead to destructive outcomes. Although the disease has not been known since 1895, Elliot first time described intestinal gangrene due to mesenteric venous occlusion, but in 1935, MVT was accepted like a clinical entity in the detailed publication of Warren and Eberhardt [3].

Delayed diagnosis is very common in MVT. In arterial occlusion, abdominal pain has acute onset and is actually unchanged but in MVT there is no specific clinical finding [7], it may be more insidious at the beginning in venous occlusion or low flow situations. Vomiting is common, sometimes a bloody diarrhea can occur but the classical triad of mesenteric ischemia (abdominal pain, fever, bloody stool) usually cannot be seen in examination. Abdominal pain is not proportional to physical findings. Early diagnosis is largely dependent on clinical awareness and suspicion [3].

Arterial occlusions are associated with cardiac arrhythmia, valve disease, previous embolism, myocardial infarction, congestive heart failure and hypotension [8]. Venous occlusions are related to primary or secondary portal hypertension, hypercoagulation and intra-abdominal malignancy [9,10].

Doppler ultrasound sometimes can show thrombus in the vessel but it is operative dependent and is not as sensitive as a CT or Magnetic resonance imaging (MRI). Contrast-enhanced CT scanning is the main diagnostic modality. Increased use of CT scanning for abdominal pain in the emergency department led to decrease of diagnosis time from 1 week to 1 day [11]. Filling defect in mesenteric vein is the most common radiological finding. Thickening and enlargement of the intestinal wall, pneumatosis intestinalis are findings linked with intestinal ischemia [11]. In CT examination, normal intestinal wall ranges from 3 to 5 mm thick depending on the degree of intestinal distention [10]. On contrast-enhanced CT, thrombus in the mesenteric and portal veins is usually visible. Mesenteric venous obstruction is confirmed by CT in more than 90% of cases [10].

The mortality rate is still not acceptable despite all of the advances in diagnostic tools, treatment modalities and intensive care facilities. Venous Mesenteric Infarct (30-49%), albeit low compared with arterial ischemia and thrombosis (60-90%) [5]. Our case is a good sample for MVT with blurred clinic, slow onset and remarkable radiological features: it attributed necrosis to the delayed diagnosis. There was no hypercoagulability problem which is known as a predisposing factor.

MVT is a rare entity with a high mortality rate. Although advanced investigation methods significantly reduced the delayed diagnosis, the mortality rates are still not reasonable. CT and CT angiography are the main radiological evaluation methods. For proper diagnosis, the vascular structures should be examined in detail and the structure of the identified thrombus should be indicated in the report.

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