

# Some causes of the Acute Gastrointestinal Bleeding: Detection, Localization and Treatment with Conventional Angiography

## *Akut Gastrointestinal Kanamanın Bazı Sebepleri: Tespit, Lokalizasyon ve Konvansiyonel Tedavi Anjiyografi*

### Background

Acute gastrointestinal (GI) bleeding is a medical emergency situation with high morbidity and mortality rates (1). Acute GI bleeding is divided into two categories by anatomic landmark, the ligament of Treitz (2). Acute GI bleeding which is above the ligament of Treitz, is called upper GI bleeding, and have 8% to 14% mortality rates (3,4). When it is localized below the ligament of Treitz, lower GI bleeding, have 3.6 % to 18 % mortality rates (5,6). Then it is important to find the localization of bleeding.

Diagnostic modalities used for the detection and localization of acute GI bleeding is endoscopy, colonoscopy, radionuclide imaging, conventional angiography or contrast enhanced multi-detector row helical computed tomography (7).

In this article, we provide an overview of GI bleeding causes which was detected and treated by conventional angiography.

### Öz

Akut gastrointestinal (GI) kanama yüksek morbidite ve mortalite oranına sebep olan tıbbi bir acildir (1). Akut GI kanama anatomik işaret yeri olan Treitz ligamanına göre iki kategoriye ayrılmıştır (2). Treitz ligamanına göre üstte yerleşen ve % 8-14 mortalitesi olan akut GI kanamaya üst GI kanaması denir (3,4). Treitz ligamanının altında yerleşirse, % 3.6-18 mortalite oranına sahip ise alt GI kanamadır.

Akut GI kanamasını bulmak ve lokalize etmek için kullanılan teşhis yöntemleri; endoskopi, kolonoskopi, radyonükleer görüntüleme, konvansiyonel anjiyografi veya kontrastlı multidedektör helikal sıralı bilgisayarlı tomografidir (7).

Bu makalede, konvansiyonel anjiyografi ile saptanan ve tedavi edilebilen GI kanama nedenlerine genel bir bakış sunuyoruz.

### Findings and Procedure Details

Acute gastrointestinal (GI) bleeding an important situation that must be faced and very immediate intervention because of its high mortality rates in the emergency department. GI bleeding is divided in two categories upper or lower GI tract which is based on the ligament of Treitz. Mortality rates have been reported to vary from 8 % to 14 % for patients with acute upper GI bleeding and from 3.6% to 18% for those with acute lower GI bleeding.

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### Anahtar Kelimeler:

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### Keywords:

Haemorrhage, Blood, Acute, Embolisation, Catheters, Angioplasty, CT, Catheter venography, Catheter arteriography, Small bowel, Gastrointestinal tract, Arteries / Aorta

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After stabilization of the patient diagnostic measures for localization the source of bleeding must be done. If the hemorrhage is localized upper GI tract the first diagnostic procedure is endoscopy whereas patients with lower GI tract bleeding undergo colonoscopy, (capsule) endoscopy, conventional angiography radionuclide imaging or contrast enhanced multi- detector row helical computed tomography. With conventional angiography definitive diagnosis and treatment can be done.

In this pictorial essay, we present a few examples of GI tract bleeding which was diagnosed and treated by conventional angiography.

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### Angiodysplasia

Angiodysplasia is a frequent of haemorrhage in the lower intestinal tract and mostly seen in old patients ectatic, dilated, thin-walled vessels that are lined by endothelium is what we see in angiodysplasia (8). The pathogenesis of angiodysplasia is intermittent, recurrent low-grade obstruction of submucosal veins at the level of the muscularis propria and it causes dilatation and tortuosity of the vessels. It is mostly seen in cecum and right colon where wall tension is the highest (8).

Angiodysplasia is usually diagnosed by endoscopy being done to evaluate gastrointestinal bleeding. With CT angiography we can see a group of hypertrophied vessels in the colonic wall, early filling veins as well as supplying enlarged artery (9) (Figure 1).

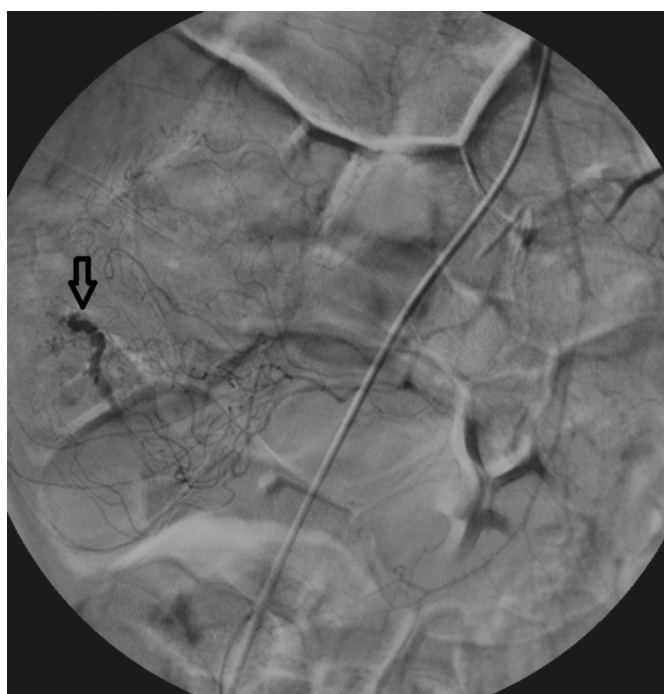
Angiography may help to localize the site of bleeding and permit embolization or infusion of vasopressin to stop the bleeding (10) (Figure 2 and Figure 3).

### Segmental Arterial Mediolytic

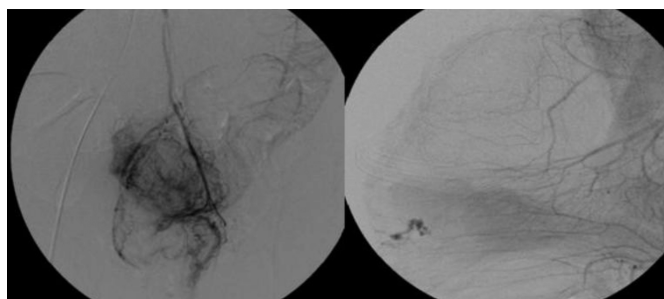
Segmental arterial mediolysis is a rare arteriopathy exists most commonly in the late middle age and elderly popula-



**Fig. 1:** 78-year-old woman with GI bleeding, CT angiography shows hypertrophied vessel in the cecum wall (arrow).



**Fig. 2:** Conventional angiography demonstrates the enlarged vessel (arrow)



**Fig. 3:** 58-year-old female suffering from hematochezia, conventional angiography shows the enlarged vessels in the cecum wall

tion and is characterized by dissecting aneurysms resulting from lysis of the outer media of the arterial wall (11). The most common presentation is acute abdominal pain and hemorrhage resulting from arterial rupture or dissection from

the weakened arterial wall.

The histopathologic lesions of segmental arterial mediolysis are; mediolysis, separation, arterial gaps, and reparative fibrosis (12). The angiographic appearance of segmental arterial mediolysis is variable, such as arterial dilatation to aneurysm formation (single or multiple), stenoses or occlusion, frequently with dissection (Figure 4). The differential diagnosis of segmental arterial mediolysis are atherosclerosis, fibromuscular dysplasia, infection (e.g. mycotic aneurysm and endocarditis), connective tissue diseases (e.g. Behcet's disease and polyarteritis nodosa), neurofibromatosis, and inherited defects in vessel wall structural proteins (e.g. type 4 Ehler Danlos and Marfan's Syndrome) (13).

### Gastroduodenal Artery Pseudoaneurysm:

Visceral artery pseudoaneurysms are rare but life-threatening conditions if rupture occurs. Pseudoaneurysms occur if there is vascular injuries or erosions such as in trauma or inflammation (i.e. pancreatitis, autoimmune disorders, vascular intervention, laparoscopic cholecystectomy and he-

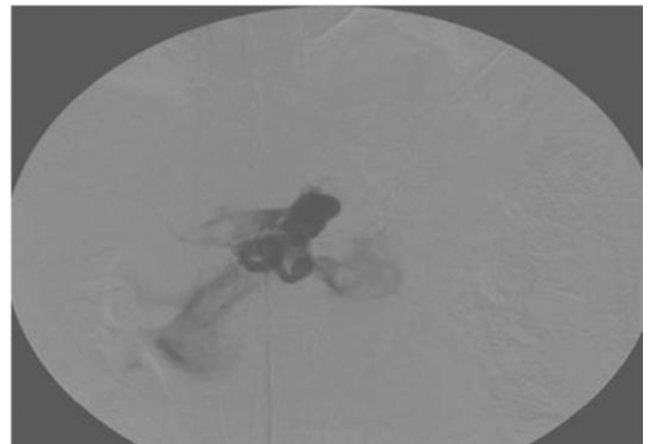
patric transplantation) (14,15).

Pancreatitis is the most common cause of the gastroduodenal artery aneurysm. The other conditions associated with gastroduodenal artery aneurysm are ethanol abuse, peptic ulcer disease and cholecystectomy (14,16).

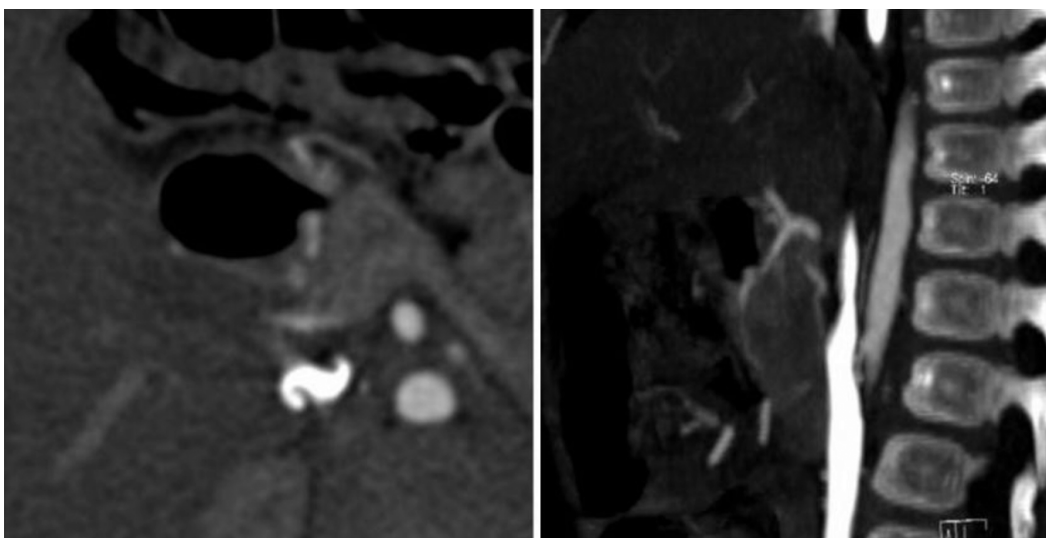
Common presenting symptoms of gastroduodenal artery aneurysm are rupture (hematemesis, melena, shock), abdominal pain, gastric outlet obstruction, compressive symptoms (nausea, vomiting), hemobilia/hemosuccus pancreaticus, pulsatile abdominal mass/bruit or patients may be asymptomatic (14).

Although conventional angiography is the gold standard for the detecting gastroduodenal pseudoaneurysms computed tomography is a good choice to localize the aneurysm with its relations to surrounding structures non invasively (14) (Figure 5).

Treatment of the gastroduodenal artery pseudoaneurysm depends on the presenting symptom, the location of the aneurysm and general condition of the patient. Surgical



**Fig. 4:** 58-year-old woman with abundant GI bleeding because of the spontaneous splenic artery rupture in the CT image (a). Conventional angiography shows splenic aneurysm and extravasation (b).



**Fig. 5:** Contrast-enhanced abdominal CT of a 38-year-old male suffering from abdominal pain and melena because of the peptic ulcer. In duodenum segment 2 peptic ulcers that cause gastroduodenal artery pseudoaneurysm are seen.



**Fig. 6:** 46-year-old man with melena, contrast enhanced CT shows gastroduodenal pseudoaneurysm, selektive gastroduodenal artery angiography, and embolization (c,arrow)

resection or ligation of the aneurysm and endovascular treatment such as trans-catheter embolization are the choices (Figure 6). If patient hemodynamically unstable because of the aneurysmal rupture ligation or bypass surgery must be choiced. But if the patient is stable the less invasive endovascular options should be preferred (14,17).

## Conclusion

Gastrointestinal bleeding is an emergency condition that has high mortality rates. Localization and treatment must be done as soon as possible. Radiologic imaging technics such as CT and angiography are helpful for detection. If the patient is stable conventional angiography can be done for detection and treatment, and there will be no need to operate the patient.

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