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Aortoenteric fistula: a possible cause of sudden death. Case report

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Abstract: An aortoenteric fistula is an open link between the aorta and a portion of the gastrointestinal tract. Aortoenteric fistulas (AEFs) are rare clinical entities that result in fatal exsanguination if undiagnosed. They are in the majority of cases the result of erosion of the bowel wall, caused by abdominal aortic aneurysm, and mostly involve the third portion of the duodenum. Most cases of AEF occur in middle-aged or elderly patients. We report the case of 83-year-old woman, who had suffered a surgical intervention for a gastric ulcer, and died 3 days later, in the hospital. At the autopsy we discovered an aortoduodenal communication due to a penetrating atherosclerotic ulcer into the duodenum. This resulted into acute enteral hemorrhage with consequent death.

Key Words: aortoenteric fistula, unexpected death, internal hemorrhage.

An aortoenteric fistula is an open link between the aorta and a portion of the gastrointestinal tract [1], and is a very uncommon cause of gastrointernal bleeding. Aortoenteric fistulas (AEF) are classified as primary [2] and secondary [3].

Primary AEF commonly arise from atherosclerotic or inflammatory abdominal aneurysm, radiotherapy, and tuberculosis, whereas secondary aortoenteric fistulas usually follow previous arterial reconstructive surgery [4]. Primary AEFs are rare clinical entities that result in fatal exsanguination if undiagnosed [4].

They are in the majority of cases (90%) the result of erosion of the bowel wall, caused by abdominal aortic aneurysm [5], and mostly involve the third portion of the duodenum [6]. Most cases of AEF occur in middle-aged or elderly patients [7].

The third portion of the duodenum is the most common site for aortoenteric fistulas. The classic presentation is that of an elderly patient with massive upper GI hemorrhage, a pulsatile abdominal mass and abdominal (or back) pain. However, this triad is present in only 11% of patients [8].

These fistulas can cause massive GI bleeding, and a delay in making the diagnosis can be lethal [7]. Contrast enhanced computer tomograph (CECT) of the abdomen is helpful with a detection rate of 30-61% [8]. Surgery is generally the preferred mode of treatment.

CASE REPORT

Clinical data

An 83-year-old woman known with hypertension, bilateral coxarthrosis and gonarthrosis for which she took non-steroidal anti-inflammatory drugs (Diclofenac, Indometacin), presented to the hospital with upper gastrointestinal bleeding exteriorized through haematemesis. The vital signs revealed a pulse of 80 beats per min and a blood pressure of 160/80 mmHg.

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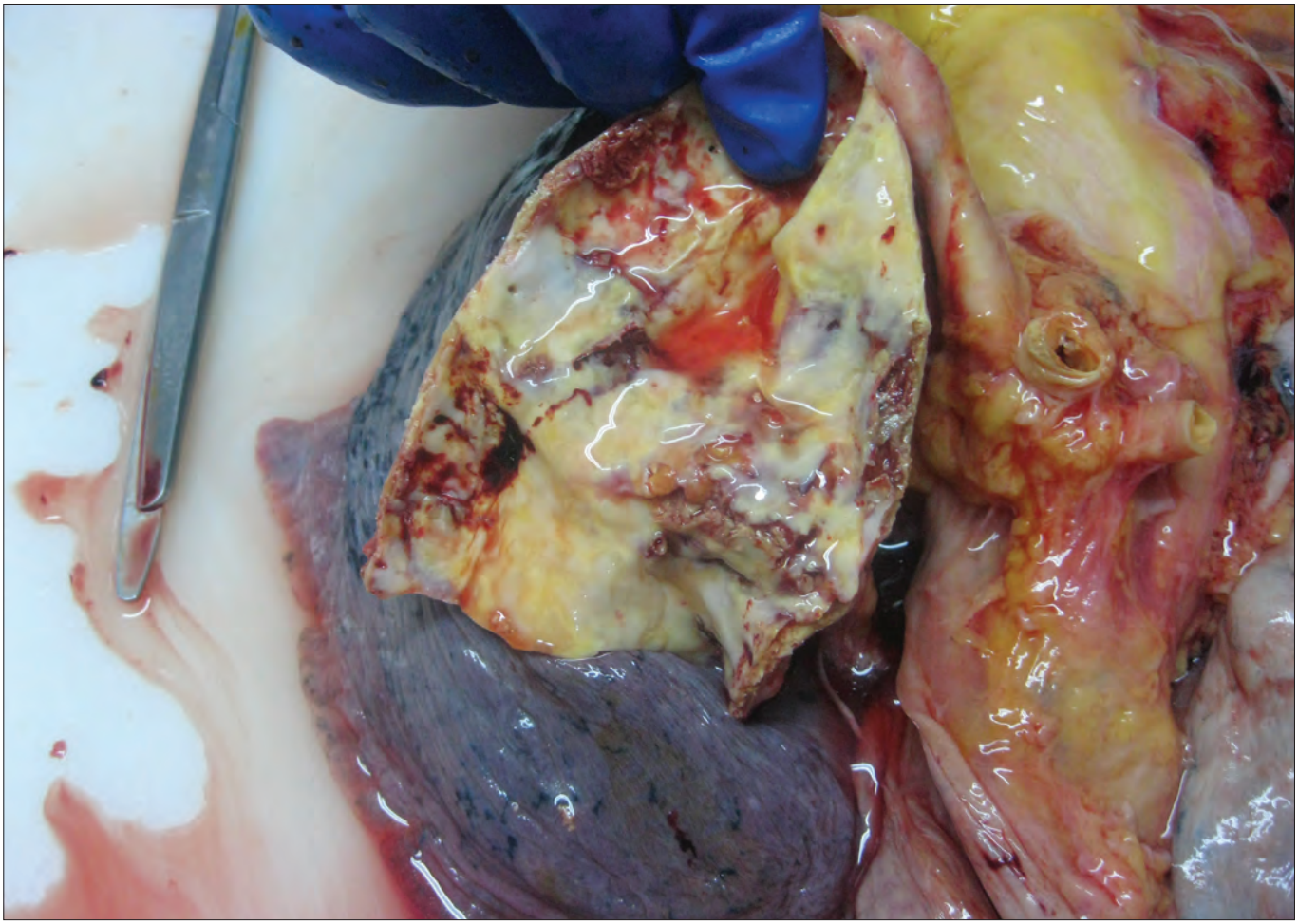

Figure 1. Macroscopic appearance of severe abdominal aortic atherosclerosis.

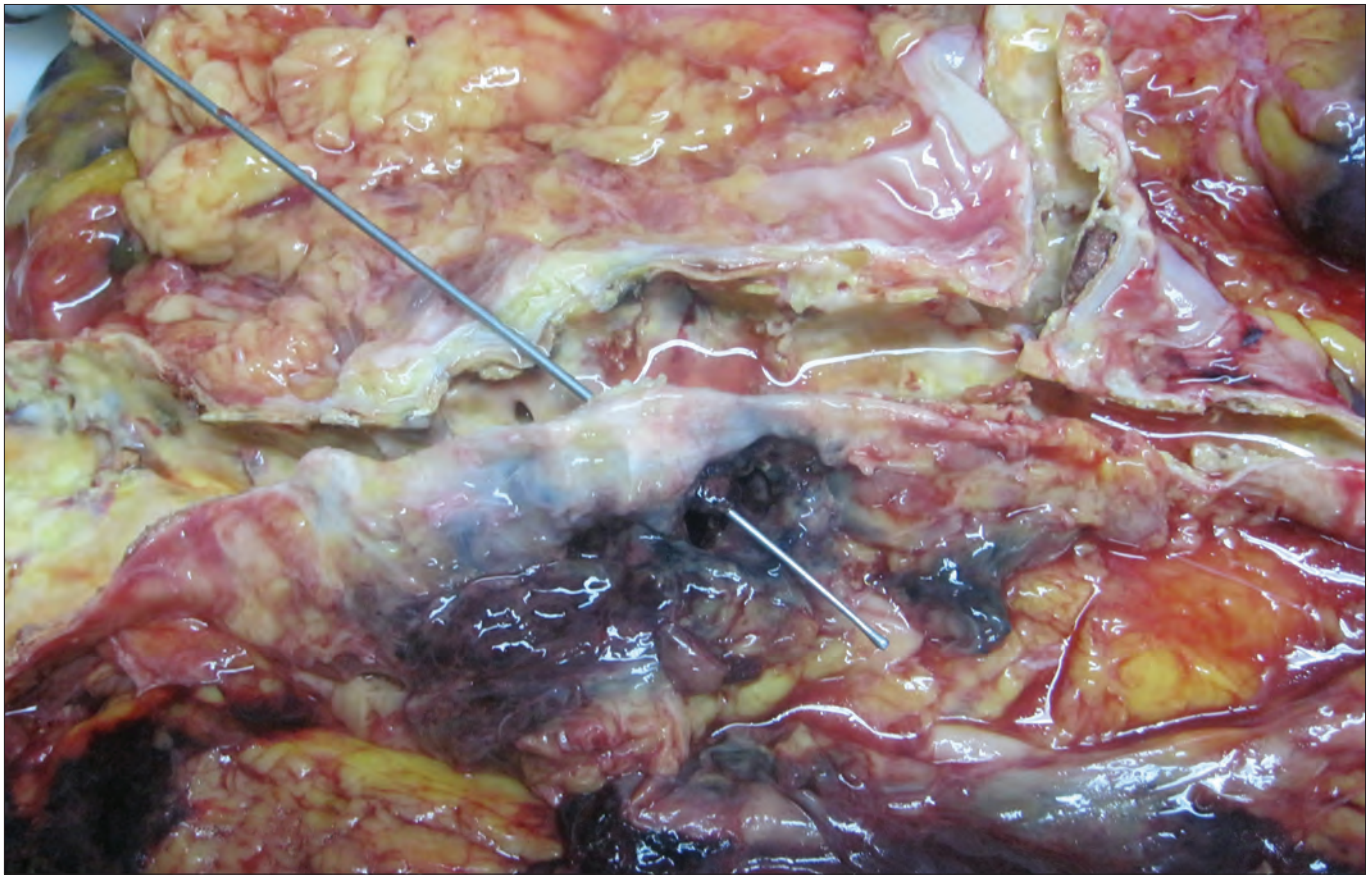

Figure 2. Rupture of the aorta at the site of the abdominal aortic aneurysm.

Significant findings on physical examination included dehydration, obesity, epigastric sensitivity, the intestinal transit was present. She underwent upper gastrointestinal endoscopy and the result revealed esophagitis Los Angeles class A, the gastric body with some acute microerosions and the gastric antrum with a few acute and chronic erosions; helicobacter pilory positive.

The following days her general status remained rather weak, therefore she stayed in the hospital for further investigation.

On the fourth day of hospitalization her general status suddenly became extremely weak, with severe bradycardia and pulse less than 30 beats per min; emergency surgery was therefore decided. Intraoperatory she was diagnosed with hemorrhagic shock and upper gastrointestinal bleeding from a Diuelafoy ulcer. The gastric mucosa was atrophic and presented two mucosal lacerations on the posterior wall, in the proximity of the cardia, without any signs of bleeding at the moment of exploration. Next, a haemostasis wired in X had been made and also a superior polar devascularization.

The bowels contained blood and no further lesions have been detected. Five hours later she suffered a severe bradycardia non-responsive to the resuscitation maneuvers, and she was declared deceased.

Autopsy findings

At the external inspection we haven't found any marks of violence, but only traces of medical treatment represented by a xifo-pubic sutured surgical incision, drainage tubes and venous puncture marks in the usual places. At the internal examination the significant findings were a pale color of the brain, severe atherosclerosis of the thoracic segment of the aorta and of the coronary arteries.

The gastric wall presented two surgical sutures in the proximity of the cardia. The bowels contained blood and the abdominal segment of the aorta had many atherosclerotic deposits in different stages of evolution.

At close inspection we found a 1 cm large rupture of the aorta located on the left postero-lateral aneurismal dilated part, 4.5 cm above the bifurcation of the common iliac arteries. This proceeded into the third part of the duodenum, through a 0.4 cm solution of continuity, thus forming the aortoenteric fistula. The cause of death was internal bleeding due to an aortoenteric fistula.

Histopathology

Significant findings on the microscopic examination revealed the aorta with changes of complicated atherosclerosis and thrombosis, conjunctive organization and periaortic inflammatory process, a fragment of digestive tube wall from the antral region with an area of mucosal erosion, and a tissue fragment consisting of fat tissue, with thrombosis, areas of necrosis, abscess and fibro conjunctive organization.

DISCUSSION & CONCLUSION

A primary aortoenteric fistula is a rare clinical entity that results in fatal exsanguinations if undiagnosed [1]. This may be a cause of a form of sudden death, leading to the obligation of performing the medico-legal autopsy.

The exact pathogenesis of these fistulas is unknown, but appears to be a combination of mechanical factors and infection [7].

Erosion of the bowel wall by the aortic aneurysm as a result of heartbeat, leads to leakage of bowel contents, with subsequent degradation and necrosis of the aortic wall by bacteria and digestive enzymes. Moreover, in the case of our patient, the abdominal wall presented itself serious integrity damage due to the atherosclerotic plaques which were in advanced stages of evolution.

As we have seen before [1], aortoenteric fistulas are classified as primary and secondary. The existing data in the literature [7] show that the latter, those that normally occur after surgical interventions upon the aortic arterial tract, may also appear in patients who had a history of abdominal or thoracic trauma with the involvement of the aortic wall. Examples in this sense might be the existence in the medical history of stab or gunshot wounds.

Furthermore, Seymour EQ [9] presented the case of an aortoesophageal fistula in a young man with a thoracic aortic graft placed 18 months previously to repair a traumatic aortic transection.

Due to the presence or absence of the patient's recording of these traumatisms in their medical history, extremely serious medico-legal issues may appear, regarding the medico-legal causality, by deciding whether the death was violent or not; obviously the legal consequences in this sense might prove to be of the greatest importance.

But, in the case of our patient we had no data of abdominal traumatic injuries or aortic surgery in the past, therefore this aortoenteric fistula was primary.

In conclusion, the peculiarity of this case consisted in the discovery at the autopsy of this very rare cause of death. Except the medico-legal issues already stated, the aim of this article was also to also draw attention to the difficulties of approaching this disease by other physicians of different specialties, involved in its diagnosis and treatment, due to the this rare disease's fulminant evolution to exitus.

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