



Total Thrombosis of the Subrenal Abdominal Aorta: A Case Report

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Abstract

Abdominal aortic aneurysms represent a diagnostic and therapeutic emergency. They are responsible for multiple complications that are life-threatening. We report the observation of a total thrombosis of the abdominal aorta on an aneurysm at the subrenal level, the patient died 2 hours after admission.

Subject Areas

Clinical Medicine

Keywords

Abdominal Aortic Aneurysms, Totalthrombosis, Subrenal Abdominal Aorta, Complications, Diagnosis, Risk Factor

1. Introduction

An arterial aneurysm is defined as a focal dilation of a blood vessel with respect to the original artery. An abdominal aortic aneurysm (AAA) is defined as an aortic diameter at least one and one-half times the normal diameter at the level of the renal arteries, which is approximately 2.0 cm. Thus, generally, a segment of abdominal aorta with a diameter of greater than 3.0 cm is considered an aortic aneurysm. Approximately 80% of aortic aneurysms occur between the renal arteries and the aortic bifurcation. Aortic aneurysms constitute the 14th leading cause of death in the United States. Each year in the United States, AAA rupture causes 4500 deaths, with an additional 1400 deaths resulting from the 45,000 repair procedures performed to prevent rupture [1].

AAA represents 3/4 of aortic aneurysms and affects 0.5 to 3.2% of the population. The prevalence is 3 times higher in men. Abdominal aortic aneurysms usual-

ly originate downstream of the renal arteries (infrarenal), but can sometimes reach the ostia of the renal arteries; 50% involve the iliac arteries. In general, an aortic diameter ≥ 3 cm constitutes an abdominal aortic aneurysm. In most cases, an endoluminal thrombus is found [2]. Here, we report the case of a total thrombosis of the abdominal aorta on an aneurysm at the subrenal level.

2. Case Report

Patient MA, 63 years old, chronic smoker, was admitted to the vital emergency room for a disorder of consciousness. The initial assessment on admission found a confused patient with a GCS of 13/15, symmetrical and reactive pupils, hemodynamically unstable with BP at 72/39 mmHg, heart rate at 122 bpm, CRT > 3 sec, and a skin pinch of dehydration. On the respiratory level, he had a SpO₂ of 50% in ambient air, and a respiratory rate of 33 cpm, on abdominal examination epigastric tenderness. After conditioning, the patient was intubated-ventilated and stabilized under high doses of Noradrenaline. The resumption of the interrogation objectified the presence of abdominal pain radiating towards the lumbar region evolving for a month. After stabilization of the hemodynamic state, a cerebral and abdomino-pelvic CT scan was performed. The cerebral scanner was without notable abnormalities. At the abdomino-pelvic level, an aneurysmal dilation of the abdominal aorta at the sub-renal level measuring 33 mm was observed, seat of total thrombosis extending over 17 cm (**Figure 1** and **Figure 2**), small aspect of the celiac trunk and its branches of division, with fine opacified intraluminal border, absence of opacification of the superior and inferior mesenteric arteries and of the ilio-femoral axis bilaterally, small intestine dilatation measured at 37 mm with ghostly appearance and loss of parietal enhancement of the intestinal walls, Parietal pneumatosis, absence of pneumoperitoneum, hepatic hypoperfusion with loss of the tiger appearance of the spleen in the arterial phase, thrombosis of the distal part of the PT. The biological assessment made it possible to objectify multiorgan failure with severe renal insufficiency, hyperkalemia, hepatic cytolysis with AST/ALT 10 times normal, incoagulable prothrombin ratio, and the patient had died 2 hours after admission.



Figure 1. Sagittal contrast-enhanced CT image show an endoluminal thrombus extending over 17 cm.

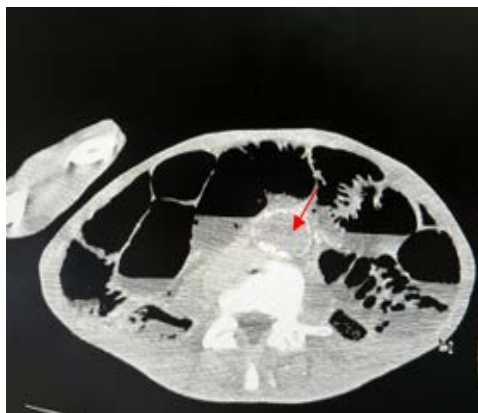


Figure 2. Horizontal contrast-enhanced CT images show that the aneurysm had a 33-mm diameter with total thrombosis.

3. Discussion

The etiology of abdominal aortic aneurysms is multifactorial, but it generally corresponds to a weakening of the arterial wall, generally by atherosclerosis. Risk factors for abdominal aortic aneurysms include smoking (main risk factor), hypertension, male sex, age (peak incidence between 70 and 80 years), family history (15% to 25%), race (more common in white patients than in patients of African descent). Most abdominal aortic aneurysms are diagnosed incidentally during physical examination or during abdominal ultrasound, CT, or abdominal MRI done for other reasons. An abdominal aortic aneurysm should be considered in elderly patients who initially present with acute abdominal or lumbar pain, with on abdominal examination a pulsating mass, either palpated or not [2]. Imaging is essential for the detection of AAA, monitoring of rate of growth, pre-operative planning and post-operative follow-up. Ultrasound is simple, safe and inexpensive with sensitivity of 95% and specificity close to 100%. It is the preferred modality of choice for monitoring of small aneurysms, especially in thin subjects. CTA is the gold standard and imaging modality of choice, but has high radiation doses. It has an excellent value for pre-operative planning including the evaluation of aortic size, rostral-caudal extent, presence of intraluminal thrombus, involvement of visceral arteries, and extension into the suprarenal aorta. It is superior to US in detecting and sizing common iliac artery aneurysms. MR angiography can provide the same information as CTA, but can be costlier, and less widely available and has longer imaging times. But this is especially useful in young patients due to lack of ionizing radiations and in situations where intravenous contrast is contraindicated, such as allergic reactions to intravenous contrast and renal failure. Role of digital subtraction angiography (DSA) is limited in the diagnosis of AAA due to advent of CTA. DSA also does not show true aneurysm size if there is mural thrombus. DSA is still an important tool in the endovascular treatment of the AAA [3]. Major complications of abdominal aortic aneurysms include rupture, infection, aorto-enteric fistula, aorto-caval fistulas pseudoaneurysm, thrombotic occlusion of branch vessel and compression of

adjacent structures. Presence of intraluminal thrombus in people with abdominal aortic aneurysms is associated with greater growth rapid and potentially dangerous aneurysm, according to a major study published in the journal *Radiology* [4]. The particularity of our case is the extensive and total nature of the aortic thrombosis.

4. Conclusion

Most patients with AAA are asymptomatic and the diagnosis is made incidentally. Imaging findings of aortic aneurysm rupture vary along a spectrum from impending rupture to contained rupture and from small aortic leaks with subtle infiltration of retroperitoneal fat to frank retroperitoneal or intraperitoneal extravasation. Aortic aneurysms most commonly occur as a consequence of atherosclerotic disease of the aorta [3]. Despite being common, the influence of intraluminal thrombus on abdominal aortic aneurysm growth and rupture risk is still not fully understood, which is likely due to competing mechanical and biochemical effects. Both maximal cross-sectional aneurysm diameter and the presence of intraluminal thrombus are independent predictors of abdominal aortic aneurysm growth [5].

Conflicts of Interest

The authors declare no conflicts of interest.

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