



ABDOMINAL AORTIC ANEURYSM CONTAINED RUPTURE: CT IMAGING FINDINGS OVERVIEW

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ABSTRACT

A 72-year-old female presented with a 4-month history of low back pain associated. A contrast enhanced CT scan demonstrated a 5.7 cm abdominal aortic aneurysm (AAA), along with signs of contained rupture. Abdominal aortic aneurysm (AAA) rupture has a high mortality rate. Although the diagnosis of a ruptured AAA is convenient, detection of impending rupture signs poses a diagnostic challenge. Early diagnosis of impending AAA rupture can be lifesaving. Further, distinction between impending and complete rupture helps in decision making regarding patient management and prognosis.

KEYWORDS : Abdominal aortic aneurysm (AAA), Ruptured aneurysm, Computed tomography, contained rupture.

INTRODUCTION

Abdominal aortic aneurysm (AAA) is defined as a focal dilation of the aorta of more than 50 % of its expected diameter.¹ Aneurysms may progress in size as a result of gradual wall weakening, with rupture occurring at the end of the growth spectrum. Aortic aneurysm rupture is the most important diagnosis you want to be able to exclude in patients with acute abdominal pain especially when they present with back or flank pain. The classic clinical triad of aneurysm rupture is present in up to 50% of patients and includes abdominal pain, pulsatile abdominal mass, and shock.² Rupture most commonly involves the posterolateral aorta with haemorrhage into the retroperitoneum. Intraperitoneal rupture may also occur, originating from the anterior or anterolateral aspect of the aneurysm.

CASE REPORT

We report the case of a 72 years old female presented to emergency department with severe abdominal pain for 5 days. Aneurysmal dilatation of infra-renal abdominal aorta measuring 5.7 X9cm (trav. XCC) evident with circumferential hypodensity s/o thrombus with thrombus to lumen ratio 0.66 with luminal irregularity.

Discontinuity in calcification on posterolateral aspect with nipping on right side with hyperattenuating crescents on right side s/o hemorrhage.

Hyperdense fluid collection seen in retroperitoneum on right side –s/o contained rupture.

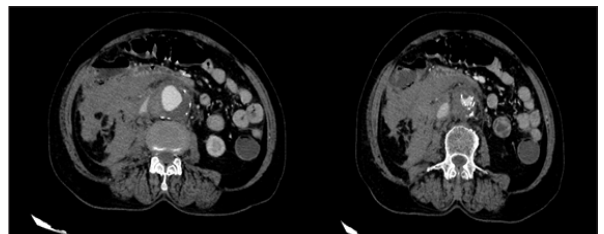
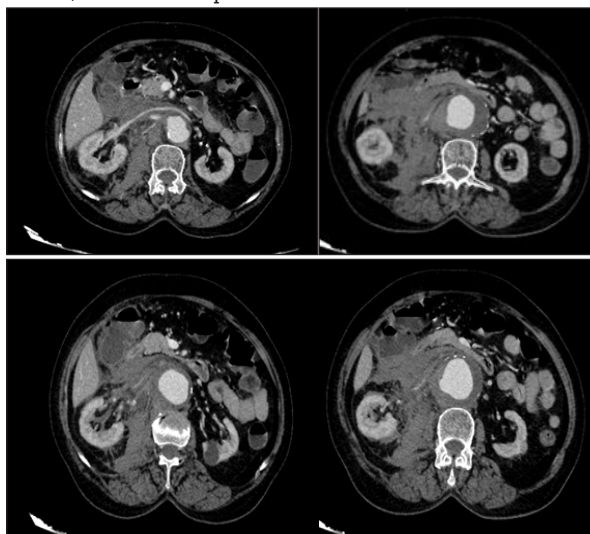


Figure 1(a-f) Axial CT sections arranged craniocaudally depicting cross-sectional appearance of infrarenal abdominal aorta aneurysm measuring 5.7 cm in transverse diameter with circumferential thrombus . Figure e,f showing discontinuity in calcification on posterolateral aspect with nipping on right side (Figure d) with hyperattenuating crescents on right side s/o hemorrhage

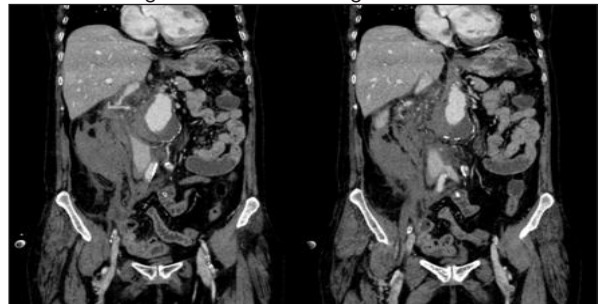


Figure 2 (a,b) Coronal CT abdomen showing infrarenal abdominal aorta with eccentric thrombus leading to decreased lumen caliber with presence of discontinuous calcification in wall .

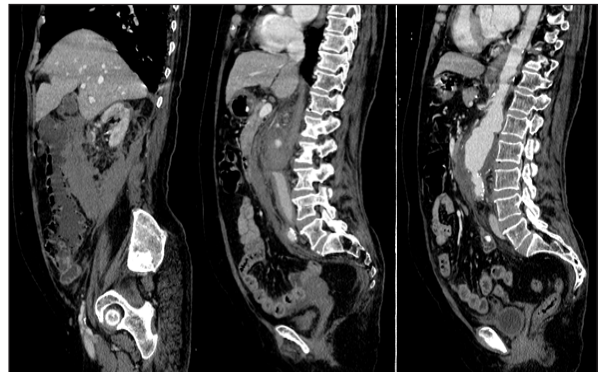


Figure 3 (a,b,c) Sagittal CT abdomen sections showing craniocaudal and anteroposterior extent of thrombus in infrarenal abdominal aorta with hyperdense fluid collection seen in retroperitoneum on right side –s/o contained rupture

DISCUSSION

Background

It is crucial to recognise imaging signs of impending and complete AAA ruptures as proper identification of these rupture signs will have important repercussions on treatment promptness and prognosis.

Etiology

Risk factors include age, male gender, tobacco usage, family history, hypercholesterolaemia, and hypertension.

Management

Classical clinical traid of aorta aneurysm rupture is pain ,pulsatile mass and shock.

Imaging-Various imaging signs can be classified according to location as shown in (Table-1)³

Table 1

Classification of signs of impending and complete aortic aneurysm rupture according to location: intramural, luminal, and extraluminal

Location	Imaging findings	Complete rupture	Impending rupture
Intramural	Increased aneurysm size	-	+
	Rapid enlargement rate	-	+
	Focal wall discontinuity	+	+
	Hyperattenuating crescent sign	-	+
	Thrombus fissuration	-	+
	Draped aorta sign	-	+
Luminal	Aortoenteric fistula	+	-
	Aortocaval fistula	+	-
Extraluminal	Periaortic stranding	-	+
	Contrast extravasation	+	-
	Retroperitoneal haematoma	+	-
	Intraperitoneal haematoma	+	-

Aneurysm size is the most important predictive factor for AAA rupture.⁴ Many aneurysms are lined with circumferential wall calcifications. In impending or complete AAA rupture, a focal discontinuity of the intimal calcifications can be seen indicating the rupture site, which is most commonly observed on the posterolateral wall.⁵ Mostly AAA rupture their posterior and posterolateral walls, the most common sign of a ruptured AAA is the presence of an AAA and an adjacent haematoma in the retroperitoneal space concomitantly. Contrast extravasation is the most specific sign of a complete AAA rupture. Chronic contained rupture of an abdominal aortic aneurysm is a subtype of abdominal aortic aneurysm (AAA) rupture in which the hematoma is sealed by the retroperitoneum.

CONCLUSION

AAA rupture represents the extreme end of life-threatening spectrum of vessel lumen growth and wall weakening. Although ruptured AAAs have characteristic imaging presentation but identifying impending rupture signs can be more challenging. This review describes the CT imaging findings and signs of contained rupture of abdominal aorta, which has important consequences on treatment and prognosis. Knowledge of alternative causes of retroperitoneal stranding and haemorrhage may also facilitate the diagnosis.

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