Case Report of Incidentally Detected Abdominal Aortic Aneurysm

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Section: Cardiovascular
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Imaging Technique: MR
Special Focus: Aneurysms Case Type: Clinical Cases
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Patient: 50 years, male

Clinical History:

50-year-old male patient presented with complaints of low back pain since one and half month. The patient was referred for MRI of lumbar spine.

Imaging Findings:

CT Aortogram (Fig. 1-4) shows focal dilatation of abdominal aorta from midlevel of body of L2 vertebra up to superior endplate of L4 vertebra with loss of fat planes that separates aorta from anterior aspect of spine and erosion of anterior aspect of body of L3 vertebra. MRI of Lumbar spine (Fig. 5-8) shows irregularity and destruction of anterior aspect of body of L3 vertebra by focally dilated abdominal aorta. Flow voids were seen at the level of dilatation of abdominal aorta.

Discussion:

Abdominal Aortic Aneurysms (AAAs) are defined as focal, permanent and irreversible localized dilatation of the abdominal aorta measuring 50% greater than the proximal normal segment or more than 3 cm in maximum diameter. [1]

Most AAAs are asymptomatic and discovered incidentally. [1] However, large AAAs may present as pulsatile abdominal mass.

Atherosclerosis is the most common risk factor that can cause AAAs. Other possible etiologies include Trauma, Infections (Salmonella, Brucella and Tuberculosis), Chronic Aortic Dissection, Vasculitis, Connective Tissue Disorders.

On plain radiographs, aneurysm may be visible as an area of curvilinear calcification in the paravertebral region on either abdominal or lumbar spine radiographs. [1]
Ultrasound has been recommended in population screening to detect abdominal aortic aneurysms. Ultrasound can also be used as a follow up to detect any increase in diameter in diagnosed cases of aortic aneurysm. Most aneurysms have a growth rate of less than 5 mm per year. However, ultrasound measurements at the renal and infrarenal level have greater intra- and interobserver variability than measurements at other levels of the aorta. This reduced accuracy is expected and may be due to obesity, bowel gas and difficulties in identifying the renal arteries.[5]

CT angiography (CTA) is considered the gold standard for evaluation, but exposes the patients to radiation. It is excellent for pre-operative planning as it accurately delineates the size and shape of the AAA and its relationship to branch arteries and the aortic bifurcation. [2]

- Signs of frank rupture [2] include:
  - Retroperitoneal hematoma
  - Para-aortic fat stranding
  - Contrast extravasation from the aorta into the retroperitoneum

- Signs of impending rupture or contained leakage [2]:
  - Draped aorta sign (contained rupture): refers to the loss of fat plan that separates the aorta from the anterior aspect of the spine and psoas muscle. Erosion of the anterior aspect of vertebral body, as observed in this case (Fig. 2,4,5,6 and 7), is the most exuberant manifestation of this sign. The mechanism suggested is repetitive mechanical pressure by arterial pulsation, which would cause chronic ischemia in the bone matrix, leading to bone lysis and remodeling. This finding indicates an imminent risk of rupture, which must be promptly identified. The mortality rates after complete rupture are approximately 90%.[4]
  - High-attenuation crescent sign
  - Thrombus fissuration
  - Focal discontinuity of intimal calcification

Management options include Close surveillance, Endovascular Aneurysm repair and Resection.

Differential Diagnosis List: Abdominal Aortic Aneurysm, Abdominal Aortic Dissection, Right Renal Artery Aneurysm, Right Renal Artery Dissection

Final Diagnosis: Abdominal Aortic Aneurysm

References:


Description: Reconstructed 3D Image of CT Aortogram showing aneurysm of infrarenal aorta.

Origin: © Department of Radiology, C. U. Shah Medical College & Hospital, Surendranagar, Gujarat, India
Description: Axial Image of CT Aortogram showing Abdominal Aortic Aneurysm with erosion of anterior aspect of vertebral body. Origin: © Department of Radiology, C. U. Shah Medical College & Hospital, Surendranagar, Gujarat, India
Description: Coronal Image of CT Aortogram showing Abdominal Aortic Aneurysm. Origin:
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Description: Sagittal Image of CT Aortogram showing aortic aneurysm with anterior vertebral body erosion. Origin: © Department of Radiology, C. U. Shah Medical College & Hospital, Surendranagar, Gujarat, India
Description: MRI Lumbar Spine T2 weighted Sagittal showing focal aneurysmal dilatation of abdominal aorta causing irregularity and erosion of anterior aspect of body of L3 vertebra. Origin: © Department of Radiology, C. U. Shah Medical College & Hospital, Surendranagar, Gujarat, India
**Figure 6**

**Description:** MRI Lumbar Spine T2 weighted Axial image showing abdominal aortic aneurysm. **Origin:**
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Description: MRI Lumbar Spine T1 weighted Axial image showing abdominal aortic aneurysm. Origin: © Department of Radiology, C. U. Shah Medical College & Hospital, Surendranagar, Gujarat, India
Figure 8

Description: MRI Lumbar Spine STIR Coronal image showing abdominal aortic aneurysm. Origin: © Department of Radiology, C. U. Shah Medical College & Hospital, Surendranagar, Gujarat, India