



A CASE SERIES ON AORTIC DISSECTION – A CODE BLUE MEDICAL EMERGENCY

Radio-Diagnosis

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ABSTRACT

Introduction: Aortic dissection (AD) is a life-threatening clinical emergency requiring rapid diagnosis and effective intervention to improve patient survival and prognosis. Computed tomography angiography (CTA) can be used to diagnose AD accurately and quickly, making it the first choice for diagnosing AD in an emergency. Early and accurate diagnosis will save a life. Here we present six cases we faced in sequence over a period of 1 year. A case of extensive dissection involving ascending and descending aorta till left common iliac artery and right proximal femoral artery up to brachiocephalic trunk, left common carotid and left subclavian artery- Stanford Type A/ DeBakey Type I, is displayed in detail. Four cases with Stanford type A and one case with Type B Stanford Classification of Aortic Dissection will be discussed here. CTA is the best imaging method for the rapid diagnosis of AD, showing high specificity and sensitivity. Thus, this case series emphasizes the value of CTA as a gold standard diagnostic modality in cases with AD.

KEYWORDS

Computed Tomography Angiography, Aortic Dissection, Diagnosis

INTRODUCTION

Aortic dissection(AD) is a rare disease whose early detection is of paramount importance for a safer outcome.^[1] It is a disease of the elderly, most commonly in 6-8th decade. Men are more affected than women and affected a little earlier than women.^[2]

The incidence is 2.6 to 3.5 per 100,000 person years. The most important risk factor is hypertension with 72% of patients having hypertension.^[1] Other risk factors include atherosclerosis, pre-existing aortic aneurysm, bicuspid aortic valve, inflammatory and degenerative diseases of the aorta. The most common manifestation is usually sudden; catastrophic; acutely severe tearing chest or back pain.

They include intramural hematoma, limited intimal tear, penetrating atherosclerotic ulcer, traumatic or iatrogenic aortic dissection and leaking or ruptured aortic aneurysm.^[4] Diagnostic imaging is essential to rapidly confirm and accurately diagnose the type, magnitude, and complications.

Acute aortic dissection is diagnosed using CT scanning with a reported diagnostic accuracy ranging from 88% to 100%. Computed tomography angiography (CTA) is the first choice for diagnosing AD in an emergency.^[4]

Aims And Objectives Of The Study

- To review all the cases of Aortic dissection from January 2021 to December 2022
- To subtype aortic dissection based on Stanford classification.
- To emphasize the role of chest CTA for evaluating acute aortic syndrome

MATERIAL AND METHODS

- This is a retrospective study including all aortic dissection cases reported in the department of Radiodiagnosis of a tertiary care centre.
- Cases reported in 1 year are reviewed.

RESULTS

A total of 6 consecutive cases of aortic dissection were analysed. The cases comprised of 2 male and 4 female patients.(TABLE 1)The youngest patient was 23 years old while the oldest was 72 years old with the mean age of 48.5 years. The most common presenting complaint was chest pain(100%) followed by giddiness and nausea.

Out of those 6 cases, 5(83.3%) were hypertensive patients.

Table 1: Patients Characteristics And Chief Complaints

Patients	Age (in years)	Male/Female	Hypertension	Chief Complaints
1	61	M	YES	CHEST PAIN, GIDDINESS
2	39	M	YES	CHEST PAIN, GIDDINESS
3	58	F	YES	CHEST PAIN, NAUSEA
4	23	F	NO	CHEST PAIN, NAUSEA
5	38	F	YES	CHEST PAIN, GIDDINESS
6	72	F	YES	CHEST PAIN, GIDDINESS

Case 1

A 61 year old male was admitted to casualty with H/O chest pain, loss of consciousness, weakness, backache, epigastric pain and nausea, pain of both axilla of one hour duration. He was a hypertensive on telmisartan 40 mg a day. He was alright until 5 days ago, he had sudden epigastric pain radiating to back and left axilla. He was profusely sweating and cold calmy at that time.

CTA was done which showed aortic dissection involving the aortic root and the flap was seen extending: Inferiorly to the proximal left common iliac artery for a length of 2.6cm and proximal right superficial femoral artery approx. 8.4cm.

Superiorly, the dissection flap was seen extending into proximal right brachiocephalic trunk, left subclavian and proximal left axillary artery and left common carotid artery for a length of 5.2cm. (Figure1,2). Stanford type A/DeBakey Type I. (Figure 3,4).

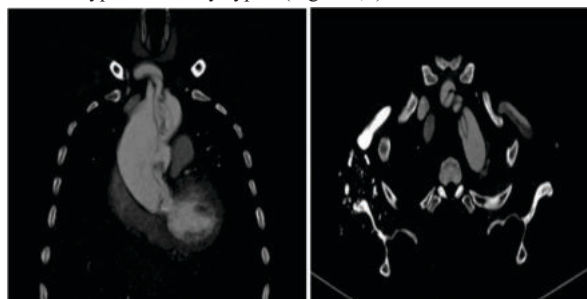


Figure 1

Figure 2

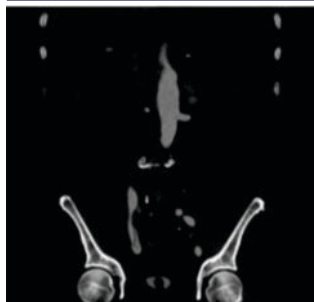


Figure 3

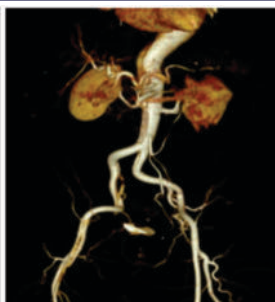


Figure 4

Case 2

A 39-year-old man was admitted with complains of chest discomfort/pain for one day, upper abdominal pain, reeling sensation, headache, giddiness and generalized weakness. His BP was 190/120mmHg and he was a k/c/o hypertension. CTA was requested. CTA was performed which showed dissection of aorta with thrombus in distal abdominal aorta extending to left common iliac artery- Stanford type A dissection. (Figure 5,6,7,8)



Figure 5



Figure 6



Figure 7



Figure 8

Case 3

A 58-year-old female patient with symptoms of chest pain, extreme weakness and giddiness following which patient had collapsed and was unconscious at the time of presentation. She was a K/C/O HTN. On admission, BP was 80/60mmHg. She was rushed to emergency dept and i.v fluids were infused rapidly. CT Aortogram with peripheral angiogram was performed. CTA showed aortic dissection involving arch, ascending and descending aorta up to its bifurcation. (Stanford A/DeBakey I). Short segment occlusion of right external iliac artery with distal reformation was noted with moderate left pleural effusion with underlying collapse. Minimal right pleural effusion was also noted. (Figure 9,10,11,12)



Figure 9

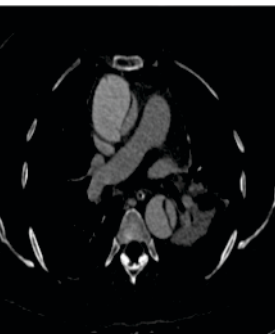


Figure 10

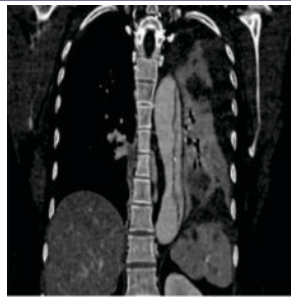


Figure 11

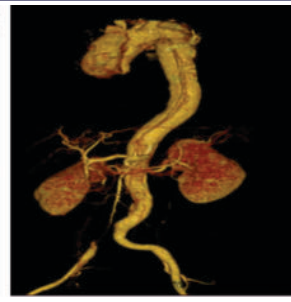


Figure 12

Case 4

A 23-year-old young female patient presented with complaints of chest pain and giddiness, nausea. She was not a hypertensive patient. CTA was done which showed intimal flap extending from mid aortic arch distal to the left subclavian artery involving descending thoracic and abdominal aorta till the level of branching of renal artery- Stanford type B classification (Figure 13,14, 15).



Figure 13

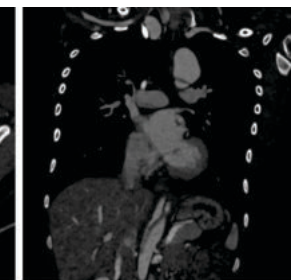


Figure 14



Figure 15

Case 5

A 38-year-old female patient presented to the emergency department with complaints of severe chest pain, radiating to the back. CTA was performed. CTA showed dissection of aorta extending from the root of aorta; superiorly extending to right brachiocephalic and common carotid artery and inferiorly it was extending up to left common iliac artery- (Stanford type A/DeBakey type I) (Figure 16,17,18). Bilateral subclavian, left common carotid, celiac trunk, superior mesenteric artery, inferior mesenteric artery and renal artery are seen arising from true lumen.

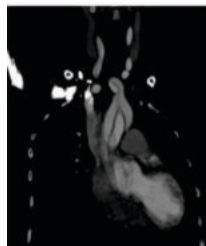


Figure 16



Figure 17

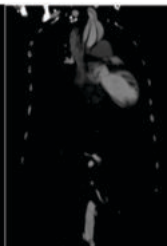


Figure 18

Case 6

A 72 years old man with history of hypertension, presented with

complaints of loss of consciousness and chest pain. CT head and neck angiogram was performed. The CT findings were aortic dissection with intimal flap extending to right brachiocephalic trunk with subclavian artery arising from true lumen and right common carotid artery from false lumen, Non opacification of the right common carotid artery from its origin till carotid bulb region.(Figure 19,20)

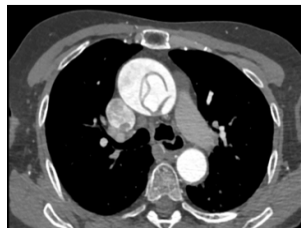


Figure 19



Figure 20

DISCUSSION

Aortic dissection is a catastrophic disease, early and accurate diagnosis and immediate treatment are essential for survival.^[5] Even with all the advances in medicine, 40% patients die immediately, 30% patients admitted to hospital first thought to have another disease and only 15% of all the victims are diagnosed antemortem. Severe chest pain anteriorly or posteriorly is the most common mode of presentation. The pain may radiate anywhere in the chest or abdomen. It can be associated with syncope, dizziness, cerebrovascular accident, myocardial infarction, heart failure, aortic regurgitation or hypotension. This study showed 6/6(100%) patients with complaints of chest pain which is similar to multiple studies done by Bhavana V et.al^[6], Tzikas S et.al^[7] and Levy D et.al^[8]. Most of the studies have recorded male patients more than female patients which is in discordant with our study which showed 4 female and 2 male patients. The mean age at presentation in our study is 48.5 years which is similar to most of the published journals. All the 6 patients had undergone CT Angiogram and diagnosis of aortic dissection was made. Most guidelines recommend either CT aortography or transesophageal echocardiogram (TEE) for the diagnosis of AAD.^[9] The spiral CT can quickly detect the location of the intimal tear and help the surgeon plan the procedure.^[10] CT angiogram is a gold standard test for acute aortic dissection and available in most cardiac centres.^[11]

CONCLUSION

Currently CTA is the modality of choice of diagnosing acute aortic dissection, therapy planning and monitoring of treated diseases. Diagnostic identification of ascending aorta involvement- AAS type A has the most consequential and prognostic implications for the patient and individual care. Management decisions are based on the following CTA findings:

Type A or Type B, side branches involved and originating from true or false lumen. One-third of mortality is caused by organ failure. Complications include rupture, coronary occlusion and aortic insufficiency.

Conflict Of Interest

There is no potential conflict of interest related to this study.

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