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Research Week 2023

Retrograde Type A Dissection after the use of a Thoracic Branch Endoprosthesis

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Keywords

Retrograde Type A Dissection, Thoracic Branch Endoprosthesis (TBE), Intramural Hematoma (IMH), Penetrating Aortic Ulcer (PAU), Genetic Risk Factors

Abstract

Purpose:

Retrograde ascending aortic dissection or intramural hematoma (IMH) following thoracic endovascular aortic repair (TEVAR) are rare but serious complications. We present a case of ascending aortic injury and IMH following TEVAR and discuss its management.

Methods:

A 70-year-old Female with hypertension and a history of tobacco use presented with a mural thrombus in the distal descending thoracic aorta. Further investigations revealed an Extent-I thoracoabdominal aortic aneurysm (TAAA) with Type B IMH and a penetrating aortic ulcer (PAU). (Figure 1A) Additional findings included multifocal saccular aneurysmal dilations (10mm) along the proximal left gastric and left hepatic arteries, and an aneurysm (5mm) of the left basilar artery. Endovascular repair with a Zone 2 TBE was performed. Completion angiography demonstrated patent thoracic and left subclavian stents without evidence of dissection. (Figure 1B) Postoperative day 7 (POD) imaging was stable, and the patient was discharged. On POD8, the patient developed chest pain and was found to have an ascending aortic Type A IMH with PAU, enlarged on interval imaging (Figure 1C), requiring ascending aorta and hemiarch replacement. (Figure 1D) An intimal tear at the base of the innominate artery was noted, and abnormal aortic tissue was identified intraoperatively.

Results:

Post-operatively, the patient experienced pericarditis and pneumothorax, managed with a pigtail catheter, and discharged on POD14. One month later, the patient was admitted with perforation at the distal sigmoid colon identified during exploratory laparotomy.

Considering the patient's multiple aneurysms and sudden change to the ascending aorta and aortic arch, genetic consultation was integrated into the patient's management.

Conclusion:

This case highlights the development of ascending aortic injury and IMH one week after TBE despite initially unremarkable postoperative imaging. As the incidence of such complications becomes increasingly defined, it underscores the need to establish an appropriate surveillance protocol and further investigate potential genetic risk factors.



Figure 1A: Presenting CTA (sagittal view) demonstrating IMH and PAU.

Figure 1B: Post-TBE aorta (12/6/2023).

Figure 1C: New ascending IMH and PAU.

Figure 1D: Status post ascending/hemi-arch repair.