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Aberrant Right Subclavian Artery Dissection Following Radial Catheterization

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Abstract

Aberrant Right Subclavian Artery is a rare anomaly found in the general population. This anomaly may be associated with various clinical manifestations, but even if it asymptomatic, it may cause difficulty as well as complications during interventional procedures. So, this case is presented to describe the case and diagnosis of the patient with aberrant right subclavian artery.

Keywords: Aberrant right subclavian artery; Iatrogenic dissection; Radial catheterization

Introduction

Aberrant Right Subclavian Artery, alternatively known as a lusorian artery [1], is a rare anomaly occurring in 0.4-1.8% of the general population [2-4]. This anomaly may be associated with various clinical manifestations but even if it asymptomatic it may cause difficulty as well as complications during interventional procedures. Coronary angiography is usually recommended via femoral route but can be done through right radial route and excessive manipulation in passing the catheter to aortic root can lead to dissection of subclavian and rupture of artery or aorta as well. The management depends upon the clinical scenario and condition of the patient which may be interventional or conservative.

Case Report

A 45-year-old male, recently diagnosed with anterior wall ST-Segment Elevation Myocardial Infarction (STEMI) came for elective angiography, as he was having continued ischemic chest pain with ST-T changes in electrocardiogram. The procedure was started from the right radial route after passing a 6F radial sheath. Accessing the ascending aorta was not achieved, even after repeated manipulations as the guide wire either used to go to the descending aorta or buckle in the subclavian artery. Even the change of catheter and wire couldn't achieve the normal route, so check injection was given which showed a dissection flap in the subclavian artery (Figure 1). The patient also started developing numbness in the right hand and the right brachial pulse was weak as compared to the left one. Examination revealed a difference of blood pressure between the right (90/60 mmHg) and the left arm (130/80 mmHg). The procedure was abandoned and Multidetector Computed Tomography (MDCT) was performed urgently showing an Aberrant Right Subclavian Artery (ARSA) arising from the aorta, having iatrogenic dissection and thrombus formation in the false lumen. The patient was managed conservatively with pain relief, and under close watch for signs of any deterioration of clinical parameters for 24 hours. The symptoms resolved with recovery of the pulses in the next 24 hours. He was discharged after 48 hours in stable condition.

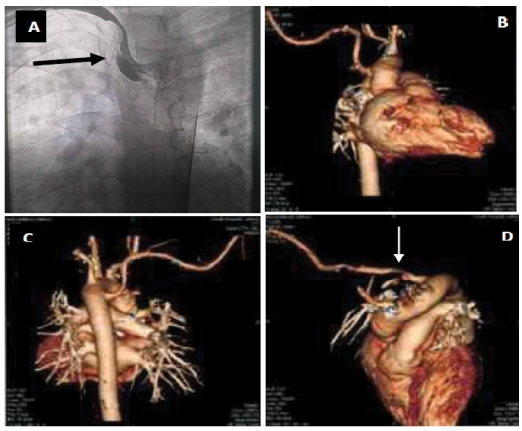

Figure 1 (A-D): Aberrant Right Subclavian Artery (ARSA) dissection following radial catheterization. **(A)** Angiogram showing dissection flap (black arrow) in right subclavian artery. **(B-D)** Multidetector computed tomography 3-dimensional volume-rendered reconstruction of great vessels, showing ARSA origin from posterior aspect of Aorta (B) and (C), stenosis with dissection flap (white arrow) in (D).

Discussion

ARSA arising from descending aorta is an uncommon congenital variant occurring in about 0.2% to 1.7% of the population [5]. The right subclavian artery usually persists as a branch from the descending aorta coursing posterior to the oesophagus, but it may pass between the oesophagus and the trachea, or even anterior to the trachea. The most common symptoms include dysphagia, cough, stridor, and thoracic pain, but it may remain asymptomatic in many cases throughout the life [6] and may be an incidental finding on autopsy [7]. Arteria lusoria is usually asymptomatic. However, more cases are diagnosed with increasing the use of trans-radial access to perform coronary angiography [8]. According to Yang et al. [9] diagnostic sensitivity in detection of aberrant right subclavian artery of 64 multislice computed tomography and Doppler sonography were 100% and 97.6%, respectively, so we used MDCT to rule out this anomaly. The diagnosis should be suspected as the guidewire fails to go to the ascending aorta rather goes to the descending aorta.

In such cases, excessive manipulation can lead to dissection of the aberrant vessel as well as aorta [10,11] as happened in our case confirmed by MDCT. Although technically difficult, it is still possible to complete the procedure without switching to the femoral route if the physician is aware of such a variant [12]. However, only 60% of the cases were performed successfully using the trans-radial approach in the settings of arteria lusoria [13], and usually the catheterization of

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both coronary arteries becomes more difficult, takes longer time, and requires more catheters, so better to switch to other preferred route to avoid future complications as well as procedural time etc. Conservative management stays as a viable approach for management if the patient remains stable [14] as we did in our case, and the patient responded well to the treatment so there was no needed intervention.

Conclusion

ARSA, though not a common anomaly, but can lead to procedural complications and must be kept in mind during radial catheterization.

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