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Mini Review

Current Update on Hybrid Management Strategies of Kommerell Aneurysms

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Abstract

Kommerell's aortic diverticula are best defined as aneurysms. Classification into 3 types helps to delineate the anatomy and decide on best treatment options. Surgery though risky and complex has been the gold standard, but hybrid (surgery-endovascular) is emerging as a safer alternative in all types. We prefer the lesions being handled by centres with hybrid facilities.

Keywords: *Aortic Arch; Kommerell's Aneurysm; Arch Anomalies*

Introduction

First reported by Kommerell in 1936 as a diverticulum this should be correctly termed as an aneurysm at the origin of aberrant right subclavian artery [1,2]. This freak of nature - lupus naturae, leads to dysphagia by an extrinsic lesion- Autenrieth termed it as dysphagia lusoria or more aptly named as Arkins - arteria lusoria [3]. The funnel shaped widening at the origin and proximal portion of subclavian artery, is due to persistence of 4th primitive right or left dorsal arch in cases of left or right anomalous arch respectively.

Salomonowitz classification [4]:

- **Type 1:** Left arch with aneurysm of anomalous RSA, usually conical.
- **Type 2:** Right arch with aberrant LSA, usually rounded.
- **Type 3:** Aneurysm of ductal or isthmus of aorta.

Reappraisal of incidence of the aneurysm is necessary as CT and MRI facilities have become widely available (Figure 1). Type 1 lesions are more prominent in males and Type 2 lesions are more prominent in females [5]. All our cases with type 2 lesions were adult females with dysphagia as the leading complaint. Incidental detections dominate the clinical spectrum. Paediatric population with soft compressible trachea makes respiratory symptoms common, while adults have dysphagia and differential arm blood pressure as prominent symptoms. Rupture is more frequent with right arch and type 2 lesions [6].

For effective guideline based practice in adults a total diameter of more than 5 cm or basal diameter of more than 3 cm [7] or in paediatric population size more than 1.5 times the distal artery diameter should warrant an intervention [8].

When endograft treatment is being envisaged the proximity of origin of anomalous right subclavian artery to origin of LSA makes preliminary debranching and revascularization of both a necessity. In situations where debranching and cervical bypass is not feasible, subclavian periscope technique is possible for type 1 lesions [9]. Arch debranching and simultaneous antegrade delivery and deployment of

thoracic stent graft is the standard procedure for type 2 lesions. Aorto axillary instead of carotid axillary can be done for revascularisation. Endografting of the arch and descending aorta with coverage of both subclavian arteries, vascular plug closure just beyond aneurysm is also a standard when undertaken with revascularisation (of subclavian arteries).

Figure 1: *Contrast enhanced CT Scan of a patient showing Kommerell's Type 2 aneurysm.*

Conclusion

Hybrid approaches have become the interventions of choice in Kommerell's aneurysm. Follow up in these cases is mandatory as stent migration, endoleaks and new aneurysms need detection and further management. The circle of Willis and vertebral artery needs careful evaluation while planning endovascular procedures. Attractiveness of the procedure lies in it being less invasive and speedy recovery, while adequacy of its safety has been well established.

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