Kommerell diverticulum should be removed when operating symptomatic children with right aortic arch and aberrant left subclavian artery (vascular ring).

Ovaert C., Luciano D., Mitchell J., Fraisse A, Kreitmann B.
Timone-enfants, AP-HM, Marseille, France

Background: Right aortic arch with aberrant left subclavian artery is the most frequent cause of vascular ring. Usual treatment in symptomatic children is ligamentum arteriosus division, leaving the Kommerell diverticulum in place with potential risk of residual compression, aneurysmal dilation and dissection or even rupture. Translocation of the aberrant left subclavian artery to the left carotid artery together with removal of the Kommerell diverticulum and division of the ligamentum through a left thoracotomy is currently advocated to avoid those complications.

Methods and results: Between 9/2009 and 8/2011, 13 patients underwent above-mentioned procedure. Clinical findings, surgical procedure and complications, histopathological findings and follow-up data were retrospectively analyzed. Mean age at time of surgery was 7.2 years (median 4.3, range 0.9-18.9), mean weight 25 kg (median 18, range 8.4-59). All had respiratory symptoms, associated with dysphagia in 5. CT scan and/or MRI had demonstrated the arch anomaly and the dilated Kommerell diverticulum in all. A left postero-lateral thoracotomy was done in all. All had bilateral cerebral oxymetry monitoring. Post-operative complications included transient chylothorax in 4 and transient phrenic palsy in 1 patient. Mean follow-up reached 6.6 months (median 1.1, range 0.1-29). Mild residual respiratory symptoms were noted in 6 patients. Echo-Doppler analysis available in 11 patients showed a patent left subclavian to carotid artery anastomosis. Histo-pathological analysis of the resected diverticulum, available in 6 patients, showed cystic medial necrosis and inflammatory tissue in 3, borderline cystic medial necrosis in 1, hyperplastic myo-intimal lesions in 1 and non specific histological findings in 1.

Discussion: Translocation of the aberrant left subclavian artery together with Kommerell diverticulum resection and ligamentum division is a safe and efficient procedure for symptom relief. The observation of profound wall abnormalities such as medial necrosis in at least 50% of the analyzed diverticuli encourages us to maintain this strategy, in order to reduce the risk of aneurysm formation and dissection.