AN INTERESTING CASE OF DYSPHAGIA LUSORIA

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SUMMARY :

The vascular ring, consisting of the right aortic arch and the retroesophageal subclavian artery originating from a Kommerell diverticulum in descending aorta and the ligamentum arteriosum, is rare in literature. We present a 41-year-old female who had dysphagia due to vascular ring. Left posterolateral thoracotomy was carried out in order to divide the ligamentum arteriosum. The Kommerell diverticulum was dissected free from the subclavian artery and resected. The left subclavian artery was reimplanted to the descending aorta with a 7 cm long 8 mm PTFE graft in order to prevent subclavian steal syndrome. The patient is doing well and she has no symptoms attributed to her previous problem.

Key Words: *Vascular Ring, Kommerell Diverticulum, Dysphagia.*

INTRODUCTION

The right aortic arch, a retroesophageal left subclavian artery and the left ligamentum arteriosum form a vascular ring of congenital origin causing tracheoesophageal compressive syndrome. It is the second in frequency of all vascular abnormalities following the double aortic arch. This ring appearing also with a Kommerell diverticulum causes esophageal compression. Reports about the surgical management of this special anomaly is rare in the literature and there is a debate about the surgical method as well. Because it is a rare anomaly, we present here a vascular ring causing dysphagia in an adult wich was treated surgically.

CASE REPORT

A 41-year-old female with dysphagia and recurrent chronic brassy cough for 15 years was admitted to our clinic. The arcus aorta was seen on the right side on the chest X-ray. The lateral esophagogram with a barium swallow demonstrated posterior indentation in the 1/3 midportion of the esophagus (Fig. 1). Aortography was performed; there was a right aortic arch and the left carotis communis artery was the first branch arising from the ascending aorta. The right common carotid artery, right subclavian artery as well as left subclavian artery were arising from the aorta in the order of appereance (Fig. 2). The left subclavian artery was originating from a diverticulum of the aorta itself (Kommerell diverticulum). This lesion was responsible for the compression of the esophagus.

A left posterolateral thoracotomy was performed and the chest was opened via 4th

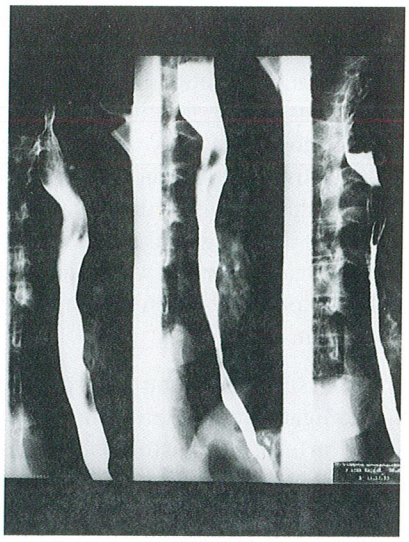

Fig - 1 : Lateral esophagogram with a barium swallow demonstrated posterior indentation in 1/3 midportion of the esophagus .

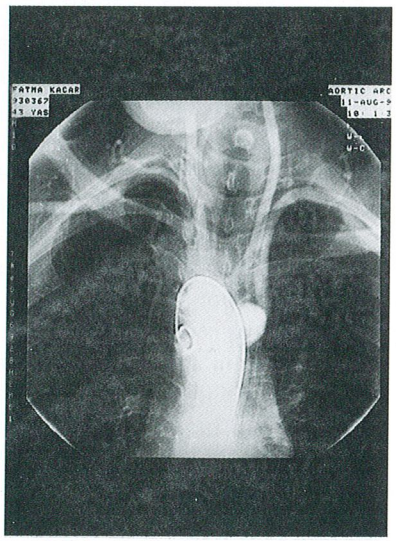

Fig - 2 : In preoperatif aortography ; there was a right aortic arch and left a. carotis communis was the first branch arising from the ascending aorta and right a. carotis communis, right a. subclavia and left a. subclavia were arising from the aorta in the order of appearance.

intercostal space. The retroesophageal aberrant left subclavian artery originating from the Kommerell diverticulum of the descending aorta was identified during dissection. The ligamentum arteriosum extending from the diverticulum to the left pulmonary artery was completing the ring. The diverticulum was compressing the esophagus.

The ring was released by dividing the ligamentum arteriosum and aberrant retroesophageal left subclavian artery. The diverticulum was resected from the descending aorta including it's origin. It was impossible to anostomose the left subclavian artery to the left common carotid artery because of the big gap between the artery stump and the aorta. A PTFE graft (8 mm, 7 cm length) was interposed between the distal end of the diverticulum in descending aorta and the left subclavian artery. The lateral and posterior portions of esophagus was dissected carefully to relieve any adhesive bands (Fig. 3).

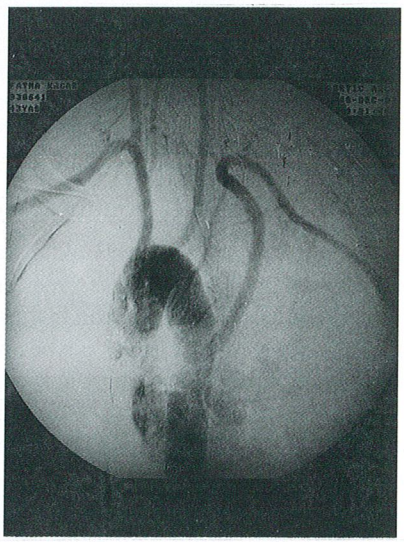

Fig - 3 : Shematic representation of anomaly and operation. A: An illustration of anomaly, B: A view of anomalous in operation, C: Resection of Kommerell diverticulum and arteria subclavia, D: PTFE graft interposition. Ao: Aorta, PA: Pulmonary arteria, Lig Art: Ligamentum Arteriosum, Öz: Esophagus, Tr: Trachea.

There was no early postoperative complication. All the pulses of the left arm were positive. The posterior indentation in the lateral esophagram disappeared. A control aortography also was obtained. In the aortography, the diverticulum had disappeared and the left subclavian artery was originating from the descending aorta (Fig. 4). The patient did well and has no symptoms in regard to the dysphagia in a follow up period of fourteen months.

DISCUSSION

This case had a vascular ring compressing the trachea and the esophagus resulting from an abnormal development of the embryonic aortic

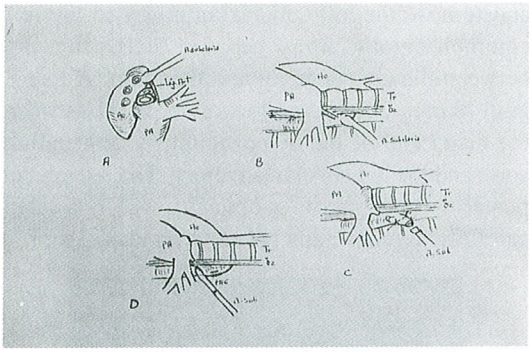

Fig - 4 : In the postoperative aortography, the diverticulum disappeared and the left subclavian artery was originating from the descending aorta.

arch complex, as reported in the literature (1-6).

The ligamentum arteriosum should always be divided in order to release the vascular ring as performed in our case. In infants with this anomaly prompt relief of respiratory distress can be obtained by dividing the ligamentum. But it is sometimes ineffective to relieve the dysphagia. There are some reports about the necessity of dividing the aberrant left subclavian artery as a second procedure (1, 7). The divided subclavian artery is sutured and it is reimplanted to left carotis communis artery or descending aorta to prevent subclavian steal syndrome in some cases (8, 9). There are several reports about subclavian steal syndrome after dividing and suturing the proximal end of the left subclavian artery (1, 4, 10). For this reason, especially in the adults, revascularisation is necessary.

Dividing the ligamentum arteriosum and the retroesophageal left subclavian artery is enough in most of the cases to release the compression of the vascular ring. But in rings with a Kommerell diverticulum, the diverticulum can cause an additional compression to the esophagus. Haas (11) suspended the diverticulum from the esophagus by fixing the proximal portion of the ligamentum arteriosum to the prevertebral fascia and turning the diverticulum posterolaterally. In 5 cases the Kommerell diverticulum was resected (1-6) and 3 reports was added to these (7, 9). The Kommerell diverticulum can cause aneurysm and rupture by time. Campbell (12) reported an aneurysm of an aberrant right subclavian artery originating from this diverticulum. Neumann (13) reported a case who died because of perforation of Kommerell diverticulum to esophagus. Arteriosclerotic changes in the diverticulum can rupture and cause death (14). For this reason, the diverticulum should be resected if it is big and compressing the esophagus. A small aneurysm was observed in the diverticulum in our case which was resected with the diverticulum.

Complete surgical treatment consists of dividing the ligamentum arteriosum and the left subclavian artery, reanostomosing the left subclavian artery and resection of the Kommerell diverticulum, if there is a compression to the esophagus.

There is arguement about the side of thoracotomy. Yung (7), advises right thoracotomy, if the Kommerell diverticulum is responsible for the compression of the esophagus. He maintains that it is easier to reach the arcus of aorta, descending aorta and aberrant left subclavian artery by this way, while adding that the resection of the diverticulum is harder by left thoracotomy. But Yung was not able to reach to the left ligamentum arteriosum in one of his cases. In one case of Lincoln (14), the anatomy of vascular malformation causing compression of the trachea and esophagus could not be interpreted by right thoracotomy and it was necessary to perform a left thoracotomy. We are in agreement with Hieketa and Chen (9): a left thoracotomy via fourth intercostal space can be used for most of the vascular rings. The different segments of the vascular ring can be dissected easily. The division of the ligamentum arteriosum, left subclavian artery and resection of the Kommerell diverticulum as well as anostomosing the left subclavian artery to left common carotis artery or descending aorta can be performed properly.

Reports about this variety of vascular ring consisting of right aortic arch, aberrant left subclavian artery and ligamentum arteriosum causing tracheoesophageal compression are rare in the literature. In cases of additional esophageal compression caused by a Kommerell diverticulum complete surgical treatment should include division of ligamentum arteriosum and aberrant left subclavian artery, resection of Kommerell diverticulum and revascularisation of the left

subclavian artery in order to prevent subclavian steal syndrome. We conclude that left thoracotomy is the choice of procedure for this type of complete surgery.

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