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Arteria Lusoria: an Exceptional Case of Infant Dysphagia

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Abstract **Case Report**

Arteria lusoria, or the aberrant right subclavian artery, represents the most frequent congenital malformation of the aortic arch, although its prevalence remains under 2% of the population. While often asymptomatic, this anomaly can cause esophageal or tracheal compression, leading to clinical manifestations such as dysphagia and recurrent respiratory infections. We report the case of an 11-month-old infant presenting with solid-food selective dysphagia, recurrent wheezing, and fever. Radiographic and contrast-enhanced thoracic CT imaging confirmed the presence of a retroesophageal right subclavian artery, consistent with arteria lusoria. Initial management involved antibiotics for respiratory infection, dietary adaptations, and supportive measures, with referral for surgical evaluation. This case highlights the diagnostic importance of advanced imaging modalities in detecting vascular anomalies and emphasizes the need for early recognition of arteria lusoria in symptomatic pediatric patients to avoid complications and ensure timely treatment.

Keywords Arteria lusoria, Aberrant right subclavian artery, Aortic arch anomaly, Dysphagia, Recurrent respiratory infections.

INTRODUCTION

The "Arteria Lusoria" also known as the "retroesophageal right subclavian artery," is a vascular anomaly that is relatively rare, occurring in less than 2% of the general population [1]. However, despite its rarity, it represents the most common malformation of the aortic arch [2]. This abnormal artery is often asymptomatic and therefore goes unnoticed in the majority of cases.

Symptoms related to the Arteria Lusoria can vary significantly. Some patients may experience isolated dysphagia, while others may suffer from recurrent respiratory infections.

Due to its unusual location, the Arteria Lusoria can cause clinical symptoms that may be misinterpreted or confused with other medical disorders. This could potentially lead to delays in diagnosis and, consequently, in treatment.

CLINICAL CASE

The case involves an 11-month-old infant, the youngest of three siblings from a non-consanguineous marriage, with no significant medical history. The child was admitted to the hospital for the management of solid foods selective dysphagia evolving during the prior 7 months. The dysphagia was accompanied by episodes of wheezing and fever, all of which are occurring without a signification alteration of the general condition.

During the clinical examination, the estimated z-scores for weight-for-age and height-for-age were -2 and -1, respectively, indicating mild stunting and underweight, but without signs of malnutrition or dehydration. In addition to the previously mentioned symptoms, the infant also has wheezing sounds during lung examination and abdominal distension with tympanic percussion sounds.

The complete blood count revealed a hypochromic microcytic anemia (Hemoglobin of 10.6 g/dl, mean corpuscular volume of 73 fl, and mean corpuscular hemoglobin concentration of 24%).

An abdominal plain radiograph showed a stenosis of the esophagus and a slight dilation above the narrowing.

A gastro-duodenal oesophageal transit study revealed a dilated appearance of the cervical and upper thoracic esophagus, with no signs of esophago-tracheal fistula.

A thoracic CT scan with contrast injection showed a compressive retro-esophageal appearance of the aberrant right subclavian artery known as "Arteria Lusoria," along with areas of ground-glass opacity and significant bilateral peribronchovascular thickening, suggesting an infectious process.

DIAGNOSIS:

The diagnosis of "Arteria Lusoria" was confirmed based on the clinical symptoms presented by the patient, which included dysphagia with solid foods, recurrent respiratory infections, and the characteristic findings observed on the contrast-enhanced CT scan.

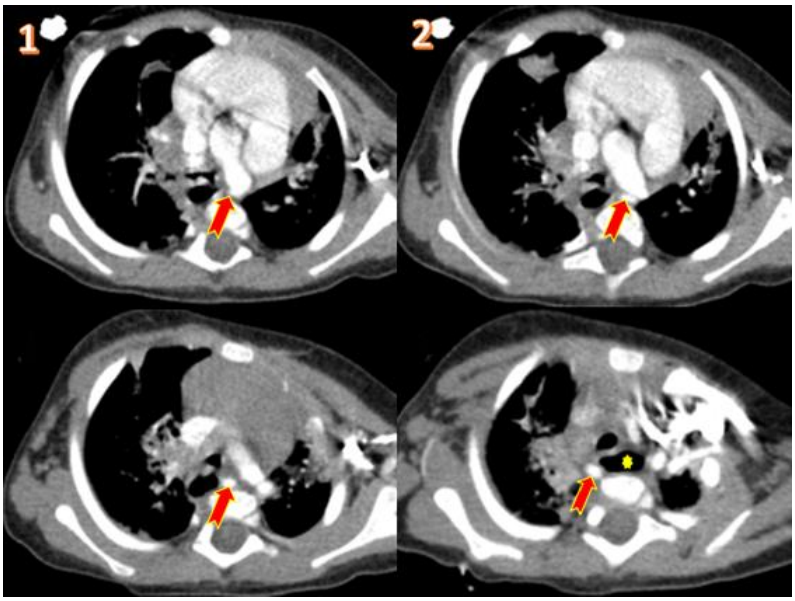

Figure 1-4: Axial acquisitions of enhanced CT scan showing Arteria Lusoria

TREATMENT:

The respiratory infection was treated with intravenous antibiotics, and the patient's diet was adjusted to consist of only liquid foods in order to prevent complications of dysphagia such as choking and inhalation. Symptomatic measures, such as head elevation during feeding, were also implemented.

After initial management, the infant was referred to the cardiovascular surgery team for further etiological treatment.

DISCUSSION

When the "Arteria Lusoria" is present, the brachiocephalic trunk is absent, and four major arteries arise from the aortic arch instead of the usual three vessels: the right common carotid artery, the left common carotid artery, the left subclavian artery, and the last one, with the most distal origin on the left side, is the right subclavian artery [3].

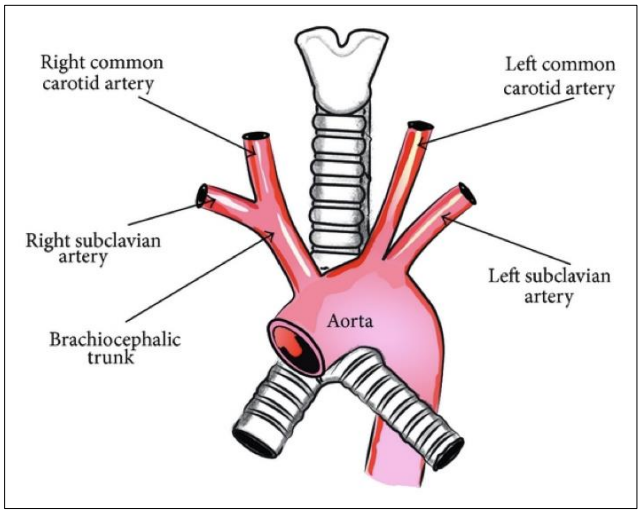

Figure 5: Representative diagram of physiological variations of the aortic arch [5]

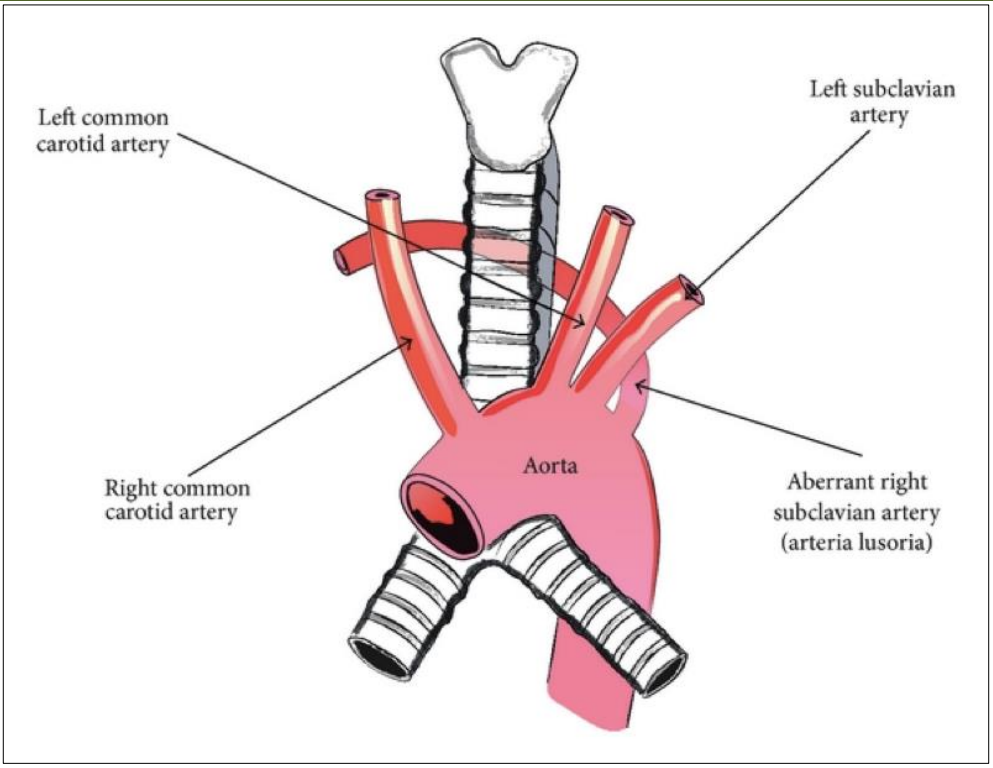

Figure 6: Representative diagram of Arteria Lusoria [5]

This aberrant artery, also known as the retroesophageal right subclavian artery or arteria lusoria, can cause esophagus compression leading to clinical symptoms called dysphagia lusoria [5]. Indeed, the arteria lusoria may cross the body's midline to reach the right arm, typically passing behind the esophagus. Its origin is often associated with a diverticulum of the aortic arch, first described by Kommerell [5]. Despite its rarity, this vascular malformation is significant as it can cause delicate clinical symptoms and requires early recognition and thorough evaluation for proper management.

This anomaly affects approximately 2% of the population and may be associated with other anatomical variations (e.g., bi-carotid trunk), heart abnormalities (e.g., aortic coarctation), and genetic diseases (e.g., trisomy 21) [5]. The arteria lusoria is asymptomatic in the majority of cases and is usually only discovered post-mortem during autopsies [4] or incidentally on post-traumatic thoracic scans. The most common symptoms are dyspnea due to tracheal compression and recurrent respiratory infections, which are more frequent in children, and dysphagia due to esophageal compression, which is more common in adults [3].

The definitive diagnosis of arteria lusoria is typically established using imaging examinations such as angiography, computed tomography (CT), or magnetic resonance imaging (MRI) [5]. According to literature results, multislice CT and Doppler ultrasound, as well as transthoracic echocardiography, present the best diagnostic options, with sensitivity ranging from 92% to 100% for congenital aortic anomalies, unlike chest X-rays, which have a sensitivity of no more than 20% for detecting such anomalies [5].

CONCLUSION

Arteria lusoria is a relatively rare condition with nonspecific symptoms. A comprehensive clinical approach, combined with appropriate imaging examinations, will lead to better understanding and proper management of the pathology. Continuous research is necessary to deepen our understanding of this specific vascular condition and to develop better therapeutic options for affected patients.

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