CASE REPORTS

Aberrant Left Subclavian Artery Associated With Kommerell's Diverticulum: Chance Finding in a 75-Year-Old Patient

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The most common anomaly of the aortic arch is the occurrence of a left aortic arch with an aberrant right subclavian artery. Other, less common anomalies have also been described. These include the occurrence of a right aortic arch with an aberrant left subclavian artery that, in addition, has a diverticulum at its site of origin known as Kommerell's diverticulum. All cases described in the literature have occurred in individuals younger than 35 years of age, generally with symptoms related to tracheal or esophageal compression. We present the case of a patient diagnosed by chance with this rare anomaly at 75 years of age.

Key words: *Aortic arch malformation. Aberrant left subclavian artery. Kommerell's diverticulum.*

Arteria subclavia izquierda aberrante asociada a divertículo de Kommerell. Hallazgo casual en un paciente de 75 años

La anomalía del arco aórtico más frecuente es la existencia de un arco aórtico izquierdo acompañado de una arteria subclavia derecha aberrante. Se han descrito otras anomalías más raras, entre las que se encuentra la existencia de un arco aórtico derecho asociado a una arteria subclavia izquierda aberrante que, además, tiene en su origen un divertículo, denominado divertículo de Kommerell. Todos los casos descritos en la bibliografía se han producido en sujetos menores de 35 años, generalmente con síntomas relacionados con compresión traqueal o esofágica. Presentamos el caso de un paciente diagnosticado de esta rara anomalía de forma casual a la edad de 75 años.

Palabras clave: *Malformación del arco aórtico. Arteria subclavia izquierda aberrante. Divertículo de Kommerell.*

Introduction

Anomalies of the aortic arch and its main branches are rare; estimations from autopsy series indicate a frequency of 3%. The most common finding is a left aortic arch accompanied by an aberrant right subclavian artery. Other, less common anomalies have also been described. These include the occurrence of a right aortic arch associated with an aberrant left subclavian artery that, in addition, has a diverticulum at its site of origin known as Kommerell's diverticulum. This malformation is rare, representing only 3% of aortic arch malformations.[1] All cases described in the literature have occurred in individuals younger than 35 years of age who generally have symptoms related to tracheal or esophageal compression. We present the case of a patient diagnosed by chance with this rare anomaly at 75 years of age.

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Case Description

The patient was male, 75 years of age, retired, an ex-smoker, and obese (body mass index of 35). Notable in the patient's history was the fact that he had been previously diagnosed, some years earlier, with severe chronic obstructive pulmonary disease (COPD) and sleep apnea syndrome. In addition, non-insulin dependent diabetes mellitus and arterial hypertension were reported. He was being treated with home oxygen therapy 18 hours per day, continuous positive airway pressure at night, inhaled bronchodilators, and orally administered antihypertensive and antidiabetic drugs. The only reported symptoms were moderate effort dyspnea, morning cough, and persistent mucus expectoration. The patient had been admitted to hospital on various occasions in recent years due to worsening of his COPD. Evaluation of lung function by spirometry revealed a forced vital capacity (FVC) of 1.45 mL (56.2%), a forced expiratory volume in the first second (FEV_1) of 0.89 mL (45.5%), and an FEV_1/FVC of 61.42%. Arterial gasometry showed basal values of pH 7.37, arterial oxygen tension of 54 mm Hg, and arterial CO_2 tension of 48 mm Hg. A chest radiograph revealed signs of chronic pulmonary disease with notable superior mediastinal widening and an aortic knob located to the right of the trachea. Computed axial tomography of the thorax confirmed the existence of a right aortic arch with an aberrant left

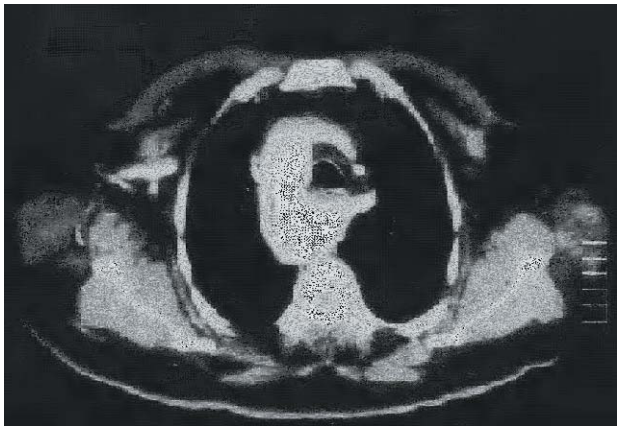

Figure 1. Computed axial tomography scan of the thorax, showing the aberrant right subclavian artery originating in a Kommerell's diverticulum.

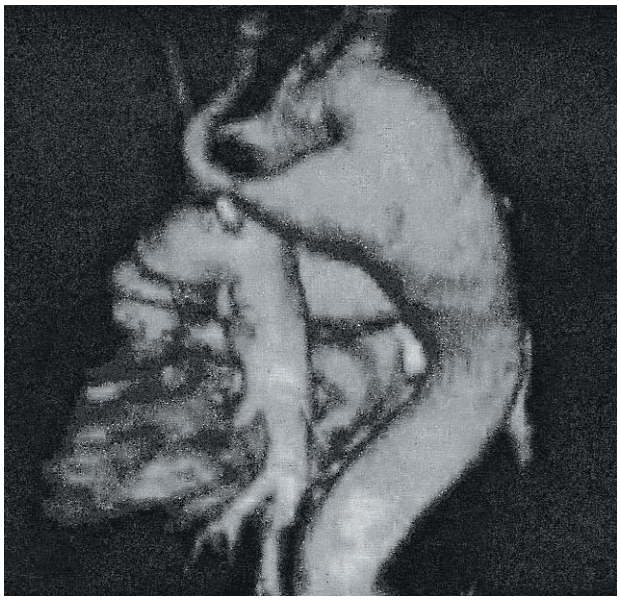

Figure 2. Three-dimensional reconstruction of the Kommerell's diverticulum.

subclavian artery associated with a Kommerell's diverticulum. No other noteworthy alterations were apparent in the pulmonary parenchyma (Figures 1 and 2). The case was discussed with the vascular surgery department, which ruled out surgical treatment.

Discussion

Few references are made to this rare aortic arch anomaly in the literature, and only 1 case has been documented in Spain.[2] Austin and Wolfe[3] found only 1 patient in a series of 32 cases. We have not found any case diagnosed in a patient more than 35 years old, making our patient, diagnosed at 75 years of age, the oldest reported in the literature.

Malformations of the aortic arch normally follow an asymptomatic course and are usually a fortuitous radiological finding, except when they cause compression of the trachea or esophagus. Respiratory symptoms are common in childhood, whilst dysphagia is the most common symptom in adult subjects. Various authors have described patients with Kommerell's diverticulum and tracheal compression that mimicked bronchial asthma.[4,5] Surgical correction in these cases can cause respiratory symptoms to disappear. Consequently, it is recommended that aortic malformations are included in the differential diagnosis of patients with asthma. Spirometry can provide evidence of upper airway obstruction, with a positive or normal bronchodilator test. In our patient, a heavy smoker with severe COPD, spirometry revealed severe obstruction of airflow; symptoms specific to COPD may have masked other respiratory symptoms caused by the aortic anomaly.

In an older patient with a more rigid trachea, the characteristic symptoms are derived from the esophageal compression caused by the aberrant artery. In such cases, dysphagia to solids, termed dysphagia lusoria, typically appears.[2] If associated aneurysmal dilation exists, it can present as localized pain in the shoulders, neck, and thorax. Ischemia of the upper left extremity secondary to thromboembolic events has also been described; this can cause rupture of the diverticulum, with fatal consequences. Our patient did not report digestive symptoms or solid food intolerance.

Thoracic radiography may be the first test that leads to a suspicion of this malformation, as occurred in the case we report. What is striking is that this diagnosis was not considered earlier. The diagnosis can be confirmed by computed axial tomography or magnetic resonance imaging. Although arteriography is considered the gold standard, it is reserved solely for those patients destined to receive surgical intervention.

Treatment is conservative in asymptomatic patients, whilst surgery is considered in those who present dysphagia or respiratory symptoms. Various surgical techniques are used to treat this anomaly. Generally they involve resection of the diverticulum and the aberrant vessel followed by reanastomosis with one of the nearby large vessels. The results are normally satisfactory and symptoms disappear. In our patient, given his age, the absence of digestive symptoms, and the degree of respiratory damage due to COPD, surgical treatment was ruled out.

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