Crossed pulmonary arteries in conjunction with tetralogy of Fallot

Fallot tetralojisine eşlik eden çapraz pulmoner arterler

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Summary – Crossed pulmonary arteries are an uncommon anomaly in which the left pulmonary artery originates superiorly and to the right of the right pulmonary artery, and the two pulmonary arteries cross each other. This anomaly may accompany other cardiac anomalies. We encountered this anomaly during echocardiographic examination of a 21-month-old boy. He had mesocardia, tetralogy of Fallot, right aortic arch, and malposition of the branch pulmonary arteries. Cardiac angiography confirmed intracardiac anomalies and showed the ostium of the left pulmonary artery lying superiorly and to the right of the right pulmonary artery and their crisscross.

Özet – Sol pulmoner arterin sağ pulmoner arterin yukarısından ve sağından kaynaklanması ve iki pulmoner arterin birbirini çaprazlaması nadir bir anomalidir. Bu anomaliye sıklıkla doğuştan kalp defektleri eşlik eder. Bu anomaliye 21 aylık erkek bebeğin ekokardiyografik incelemesi sırasında rastladık. Hastada mezokardi, Fallot tetralojisi, sağ arkus aort ve pulmoner arterlerin malpozisyonu vardı. Kardiyak anjiyografi de intrakardiyak anomalileri doğruladı ve sol pulmoner arter ostiyumunun sağ pulmoner arter yukarısından ve sağından çıktığını ve iki pulmoner arterin birbirini çaprazladığını gösterdi.

Crossed pulmonary arteries are a very rare form of pulmonary arterial malposition. As this anomaly is usually associated with congenital cardiac and extracardiac diseases, recognition of this anomaly is seriously important. In this anomaly, the origin of the left pulmonary artery from the pulmonary trunk lies to the right and is usually above the origin of the right pulmonary artery.[1] Thus, both pulmonary arteries cross each other on their course to the lungs.[1]

CASE REPORT

A 21-month-old boy was referred to our hospital for heart murmur. Physical examination showed mild cyanosis and a grade 3/6 systolic ejection murmur at the left sternal border with normal morphologic features. The echocardiogram revealed mesocardia, tetralogy of Fallot, right aortic arch, and malposition of the pulmonary arteries. Cardiac angiography confirmed intracardiac anomalies (Fig. 1a) and showed the ostium of the left pulmonary artery lying superiorly and to the right of the right pulmonary artery (Fig. 1b, c). The branch pulmonary arteries then crisscrossed as they coursed to their respective lungs.

DISCUSSION

Crossed pulmonary arteries are the classic form of malposition of the branch pulmonary arteries. The developmental mechanism of malposition of the branch pulmonary arteries is attributed to the differential growth within the pulmonary trunk, resulting in counterclockwise rotation of the normal origins of the branch pulmonary arteries.

Crossed pulmonary arteries may be seen in association with other cardiac anomalies, mainly conotruncal malformations, including truncus arteriosus, interrupted aortic arch, tetralogy of Fallot, atrial septal defect, and left superior vena cava.[2-5] Dysmorphism and/or chromosomal anomalies including 22q11 deletions have also been reported in some patients.[1] The diagnosis can be made by cross-sectional echocardiography, angiography, magnetic resonance imaging, and three-dimensional helical computed tomography.[1]

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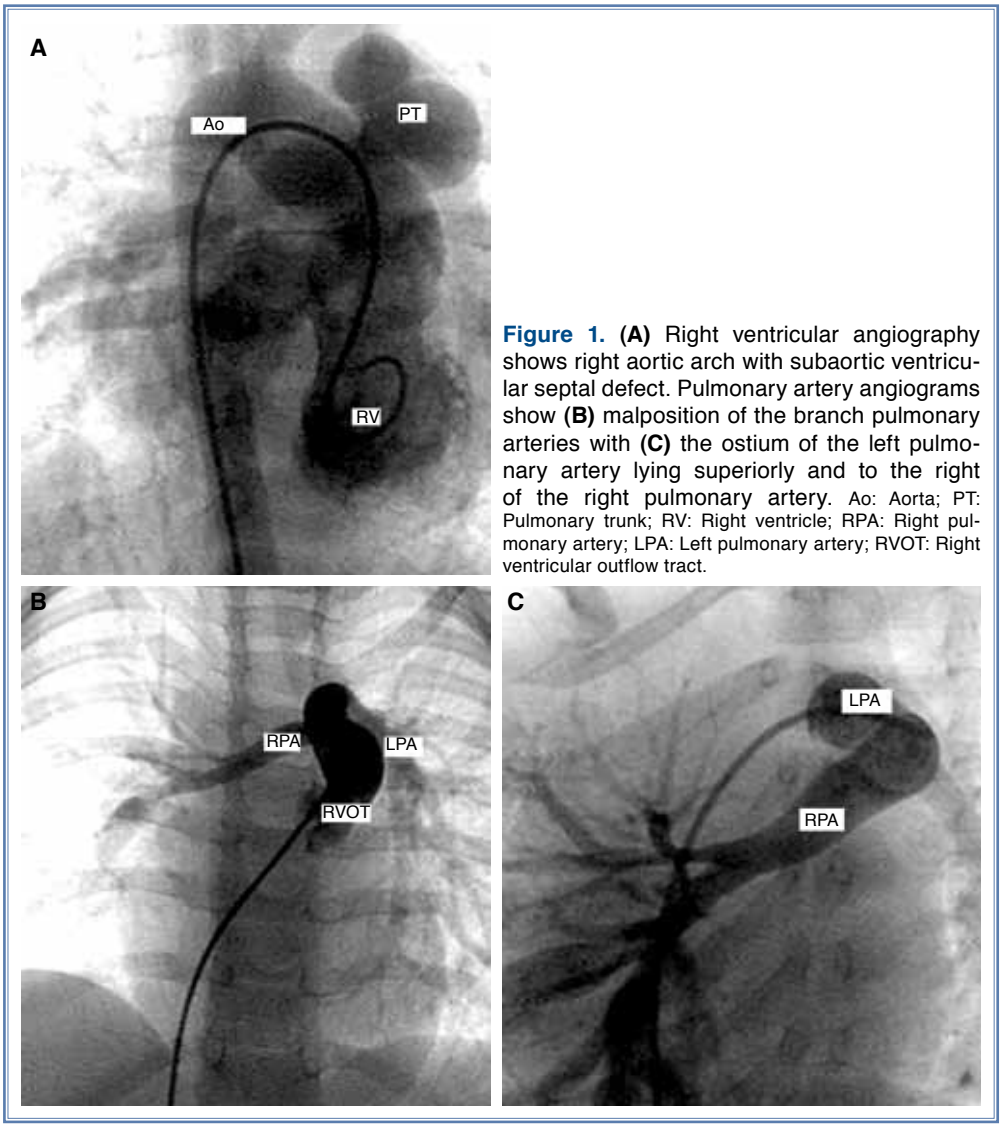

Figure 1. **(A)** Right ventricular angiography shows right aortic arch with subaortic ventricular septal defect. Pulmonary artery angiograms show **(B)** malposition of the branch pulmonary arteries with **(C)** the ostium of the left pulmonary artery lying superiorly and to the right of the right pulmonary artery. Ao: Aorta; PT: Pulmonary trunk; RV: Right ventricle; RPA: Right pulmonary artery; LPA: Left pulmonary artery; RVOT: Right ventricular outflow tract.

Crossed pulmonary arteries must be distinguished from other pulmonary artery malpositions that cause tracheal compression (i.e., pulmonary artery sling). In pulmonary artery sling, the left pulmonary artery courses between the trachea and the esophagus, whereas, in crossed pulmonary arteries, the pulmonary arteries cross anterior to the trachea.

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Key words: Heart defects, congenital; infant; pulmonary artery/abnormalities; tetralogy of Fallot.

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