

Anatomopathological analysis of the valvar dysplasia and aortic arch abnormalities in common arterial trunk

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BACKGROUND: Some of the associated abnormalities in common arterial trunk (CAT) like aortic arch obstruction and truncal valvar dysfunction may impact on the operative mortality and morbidity. **OBJECTIVE:** We sought to evaluate the gross features of the aortic arch and the histo-morphometric morphology of the truncal valve, looking for a possible relation between these anatomical abnormalities. **METHODS:** Twenty three heart specimens with CAT were analyzed. Gross features, such as aortic arch route and obstruction, and the presence of an arterial duct, were annotated. The thickest truncal semilunar leaflet was sampled for histological analysis. Linear measurements of thirteen of the leaflets were obtained: the thickness, length and total area. The collagen area fraction was also determined for the sampled leaflet using color detection in sirius-red stained histological sections. **RESULTS:** Five (26.31%) specimens had some abnormality of the aortic arch: four retroesophageal subclavian arteries and one coarctation. In 6 (31.57%) of the available cases, the arterial duct was present and 1 (5.26%) had an arterial ligament. It was possible to establish a significant association between the presence of a patent arterial duct and a retroesophageal subclavian artery ($p=0.038$). The thickest valvar segments were the medial and distal ones. The valvar thickness correlated to the total leaflet area ($R^2=0.805$; $p<0.001$ and $R^2=0.843$; $p<0.001$, respectively for the medial and distal leaflet segments). The group with an arterial duct presented a trend toward greater total area of the semilunar leaflet ($p=0.053$). Patients with values of collagen area fraction larger than the group average (44,2%) showed a tendency to be older ($p=0.095$). **CONCLUSION:** The association between an aberrant subclavian artery and the presence of an arterial duct in CAT can serve as a guide to the echocardiographer in the diagnosis of associated lesions. Dysplasia of the valvar leaflets is characterized by thickening of its medial and distal segments, and may be considered a progressive process, taking into account the trend toward increased collagen area in older patients. Finally, the association of a greater leaflet thickness and the presence of an arterial duct could suggest a common causal factor leading to both abnormalities in CAT.