

Truncal valve dysplasia is related to abnormalities of the coronary arteries: a pathological study

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BACKGROUND: The arterial valve of hearts with a common arterial trunk (CAT) may show dysplastic leaflets and be insufficient or, more rarely, stenotic. Marked truncal valve malformations appear to be an important causal factor in early deaths and may impact the postoperative prognosis of the affected children. The morphology of truncal valve deformities is still poorly defined and usually described qualitatively in the literature as nonspecific fibrous thickening of the nodular margins of the leaflets. Anomalies of the coronary arteries are also described as frequent findings in CAT. To date, however, no study has sought to establish objective relations between the truncal valve abnormalities and other morphological features of the defect. **OBJECTIVE:** Systematically assess, both qualitatively and quantitatively, using histo-morphometric techniques, alterations of the truncal valve and check for possible associations with the coronary anatomy. **METHODS:** Thirteen heart specimens with CAT were analyzed. The thickest truncal semilunar leaflet was determined on gross examination and sampled for histological analysis. Linear measurements were obtained: proximal, medial and distal thicknesses, length and total area of the leaflet. Gross features of the coronary arteries ostia (number, position and shape) were annotated. **RESULTS:** The thickest valvar segments were the medial and distal ones. There was a significant negative correlation between the distal thickness of the valvar leaflet and the linear distance from the coronary ostium to the valvar commissure ($R^2=0.448$; $p=0.024$ and $R^2=0.697$; $p=0.001$, respectively for the left and right coronary ostia). The prevalence of high take-off (coronary ostium above the sinutubular junction) was respectively 36.4% and 18.2% for the right and left coronary arteries. Anomalous shape (not rounded or elliptical) of the coronary ostium was significantly more prevalent for the left than for the right coronary artery ($p=0.008$). **CONCLUSION:** Anomalies of the position and shape of the coronary ostia are related to the dysplasia of the truncal valve. Also, there are significant differences between the anomalies of right and left coronary ostia. These malformations should call attention to the possible effects on the correspondent territory of irrigation of the coronary artery.