Echocardiographic accuracy in detecting coronary pattern in transposition of the great arteries: a 10-year single center experience

Bambino Gesù Pediatric Hospital Rome, Italy

INTRODUCTION: Re-implantation of coronary arteries is a key factor in arterial switch operation. Preoperative assessment of coronary artery anatomy in transposition of the great arteries (TGA) is a crucial issue for planning surgical technique. Overall, patients (pts) with any variant coronary pattern have nearly doubled mortality. Echocardiography is the main diagnostic tool for the preoperative assessment of coronary anatomy in TGA.

AIM: Primary aim of our study was to retrospectively review our 10-years experience and to evaluate our echocardiographic preoperative accuracy in detecting coronary anatomy pattern comparing echocardiographic to surgical findings. Secondary aim was to determine association between post-surgical outcome and coronary pattern.

METHODS AND MATERIALS: We retrospectively reviewed echocardiographic, operative and medical records of TGA cases referred to our institution for primary surgical repair between January 2004 and January 2014. Echocardiographic coronary anatomy descriptions were compared to surgical and/or autopsy findings to establish diagnostic accuracy.

RESULTS: We identified 181 pts with TGA who underwent surgery from January 2004 to January 2014. Coronary pattern were described as “usual” for TGA in 111 cases (61%) in which surgical agreement was 95% (106/111pts); unusual coronary patterns were described in 70 pts (39%) and were confirmed at surgical time in 87% of cases (61/70pts). Overall 10 pts had intramural coronary artery, in whom 8 pts were identified by pre-operative echocardiography (80%).

Failure to detect correct coronary pattern by echocardiography was observed in 14 cases. Echocardiographic diagnostic accuracy in identifying intramural coronaries was 80% (sensitivity 88%, specificity 98%) but reached 100% in the last 6 years. Sensibility and specificity for anomalous circumflex artery were 92% and 98%. Intraoperative mortality was 0%; early mortality at 60 days was 1%.

CONCLUSIONS: Echocardiography is a reliable tool in detecting coronary anomaly in TGA with an overall accuracy of 92%, including more complex TGA patterns and even in the presence of intramural course.