FACTORS INFLUENCING AUTOGRAFT VALVE DILATATION IN PATIENTS FOLLOWING ROSS OPERATION IN LONG-TERM FOLLOW-UP INSTITUTIONAL EXPERIENCES

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Background: Dilatation of the pulmonary autograft root in the aortic position exposed to systemic pressure is still the crucial problem in the long-term follow-up after Ross operation. We assess the prevalence, risk factors, and clinical consequences of late autograft dilatation.

Methods: We reviewed history 120 pts (mean age, 7,6 ± 2,0 years) who underwent Ross or Konno-Ross surgery between 1995-2012. There were 75 pts below 15 years of age. Autograft annulus size, autograft sinus diameter and valve insufficiency (AI) were assessed using transthoracic echocardiography one week after procedure, 6 months and then annually after operation. These diameters were compared with normal valves values predicted by body surface area. V/s index (autograft annulus to sinus diameter) was assessed during follow-up. Z-score for autograft annulus was assessed just after operation (Z_0)and in the late follow-up (Z_f) and Z-score rate of change per year (g/y) was calculated.

Results: End-points of the study were freedom from autograft dilatation, from moderate or severe autograft regurgitation and freedom from reoperation. There were 1 early death and 2 late deaths in our series. Late autograft dilatation was identified in 35 (30%) patients and regurgitation in 15 (12,5%). Freedom from dilatation was 75±10% at least 5 years, freedom from regurgitation was 90±6%, and freedom from reoperation was 89±4%. Implantation of aortic mechanical valve was performed in 1 pt 7 years after Ross operation. Autograft root diameters were compared to normal values (Z-score) referred to annulus, sinus of Valsalva and sinotubular junction, Cox proportional hazard analysis identified older age as predictive of autograft dilatation (P=0.007).

Conclusions: Autograft dilatation has been identified more often in patients who underwent Ross procedure above 7 yrs of age. Higher Z-score in younger patients was a result of physiological discrepancy in diameters between pulmonary and aortic valves.