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Risk factors for thrombosis, overshunting and death in infants after Modified Blalock-Taussig-Thomas Shunt

Küçük M.(1), Özdemir R.(1), Karaçelik M.(2), Doksöz Ö.(1), Karadeniz C.(1), Yozgat Y.(1), Meşe T.(1), Sarosmanoğlu ON.(2), Karagöz U.(2)

Department of Pediatric Cardiology, Dr. Behçet Uz Children's Hospital, İzmir, Turkey(1)

Department of Pediatric Cardiovascular Surgery, Dr. Behçet Uz Children's Hospital, İzmir, Turkey(2)

OBJECTIVE: We evaluated 44 subjects under 2 years old who had Modified Blalock Taussig shunt (MBTS) since 2009 to 2013 to investigate risk factors for thrombosis, overshunting and death.

METHODS: Forty four patients under 2 years of age, undergone MBTS procedure in our hospital from 2009 to 2013 were included in this observational study. Severe cyanotic newborns with pulmonary stenosis or atresia and duct dependent circulation, infants having TOF with small pulmonary arteries were the indications for surgery. Pre operative characteristics such as hemoglobin, hematocrite, mean platelet volume, protrombin time, partial thromboplastin time and post operative medication were noted. Risk factors for post-operative overcirculation, thrombosis and death were investigated.

RESULTS: Patients' age and weight at the time of procedure were ranged from 1 day to 20 months (median 12 days) and 2,4 kg to 12 kg (mean 4,6 kg), respectively. 8 patients died after surgery at a median of 8 days (1-31 days) of which 4 patients were diagnosed with Tetralogy of Fallot (TOF), 2 patients with Pulmonary atresia (PA) and intact ventricular septum, 1 patient with PA and ventricular septal defect, 1 patient with tricuspid atresia and pulmonary stenosis. The mortality rate was %18,2. 4 patients (9,1%), had shunt thrombosis. 3 of 4 did not receive heparin infusion while one had shunt thrombosis on post operative sixth day despite immediate therapeutic heparin infusion administered for 24 hours. Partial thromboplastin time (aPTT) was 28.7 seconds in patients with thrombosis, 35 in rest. (p =0,04). Overcirculation was detected in 5 patients by echocardiography. Shunt size/ body weight ratio was 1,25 in patients who had overcirculation, 1,06 in rest. But the difference was not statistically significant.

CONCLUSION: Modified Blalock Taussig Shunt operation stands out as a good option when total correction is impossible in infants with cyanotic heart disease especially in developing countries. So it is important to assess risk factors associated with the procedure. A preoperative low aPTT value may be an indicator for thrombosis in infants undergone MBTS surgery.