Catheter-based interventions for modified Blalock-Taussig shunt obstruction: a 20 years experience.

Bonnet M., Petit J., Lambert V., Brenot P., Riou J.-Y., Angel C.-Y., Belli E., Baruteau A.-E.
Marie Lannelongue Hospital, Paris, France

Introduction: Thrombotic occlusion of a modified Blalock-Taussig shunt is rare, leading to life-threatening hypoxemia. Rescue percutaneous interventions may allow recanalization of the systemic-to-pulmonary shunt but data on large patients’ scales are lacking. We aimed to describe safety and effectiveness of catheter-based interventions to restore modified Blalock-Taussig shunt patency.

Methods: All patients who attempted transcatheter intervention for thrombotic occlusion of a modified Blalock-Taussig shunt at our Institution from 1994 to 2014 were reviewed. Characteristics, management and outcomes of the 28 identified patients were analyzed.

Results: Thirty-three procedures were performed at a median age of 0.6 years old (range: 0.03 to 32.1 years) and a median weight of 5.8 kg (range: 2.2 to 82 kg), with a m/f sex ratio of 1.15. Percutaneous intervention consisted in 33 balloon angioplasty (100%) and 14 stent implantations (42.4%). Thrombolytic agents were also used in 6.1% cases. No peri-procedural death occurred but complications were observed in 5 patients (15.2%), including one catheter-induced transient complete atrioventricular block, one cardiac tamponade and one massive thrombo-embolic stroke. Early procedural success was obtained in 28 patients (84.8%) and remained long-lasting in 26 patients (78.8%). A young age and a low body-weight at the time of the procedure were significantly associated with procedural failure (p=0.0364 and p=0.0247 respectively).

Conclusions: Although technically challenging and carrying potential major complications, transcatheter intervention can be considered as an efficient rescue strategy to restore patency in case of thrombotic obstruction of a modified Blalock-Taussig shunt. However considering our experience and previous studies, the use of thrombolytic agents could also be considered as a first-line treatment when no anatomical cause is found to the Blalock-Taussig shunt’s obstruction.