P-62

Brachial arterio-venous fistula to augment pulmonary artery flow in patients with complex congenital cyanotic heart disease.

Warriner D., Oliver J., English K., Cullington D.
Leeds Teaching Hospitals NHS Trust, Leeds, UK

Introduction: There are a variety of options to augment pulmonary blood flow in adults with complex, cyanotic, congenital heart disease. One method to augment pulmonary blood flow in is by creation of a peripheral arterio-venous fistula. Theoretically, this is the simplest, lowest risk surgical option to augment pulmonary flow for patients with a pre-existing cavo-pulmonary shunt and who do not have pulmonary hypertension.

Methods: We describe a case series of four patients who regularly attend our congenital unit who have cyanotic congenital heart disease, a pre-existing cavopulmonary shunt and undergone creation of an upper limb arterio-venous fistula (brachio-basilic or brachio-cephalic) within the last 6 years, to augment pulmonary flow. All patients had a prior history of worsening breathlessness, fatigue and cyanosis before their artero-venous fistula. We have summarised the published literature pertaining to arterio-venous fistula creation in relation to augmenting pulmonary blood flow (Table 1).

Table 1: The published literature for arterio-venous fistula in augmenting pulmonary blood flow in complex congenital heart disease.

Author	Year	n =	Follow-up	Outcome
Mitchell	1989	5	2.5 years	Symptoms
Magee	1996	11	7.4 years	Haemoglobin/O_2 Saturations
Hickey	2010	21	11 years	Symptoms
Quinonez	2011	11	2.8 years	Haemoglobin/O_2 Saturations
Quarti	2011	6	1.3 years	Haemoglobin/Haematocrtit
Chanana	2015	23	N/A	O_2 Sats

Results: Three patients had a sustained symptomatic improvement at mean follow-up of 28 months (range 6 to 72 months). In the patients who had an improvement in symptoms, there was a reduction in haemoglobin of - 17 g/L (range 6 -27), a mean increase in oxygen saturation of + 11% (range 4 - 20) and improvement in NYHA class of 1 (range 1-2). Complications were reported in two patients. One developed ischaemia of the hand due to arterial steal. Another developed decompensated heart failure due to the increase in volume loading of the ventricle.

Conclusions: Peripheral AV fistula creation remains a valuable therapeutic intervention for some patients who have complex, cyanotic congenital heart disease, have a pre-existing cavo-pulmonary shunt, have progressive symptoms of breathlessness or worsening cyanosis but who have otherwise limited treatment options. Due to its simplicity, the option of creating an arterio-venous fistula is attractive, but it is not without adverse consequences too.