Contribution of semi quantitative MRI perfusion imaging in adolescents with suspicion of myocardial ischemia after the arterial switch operation

Atallah V., Kara M., Meot M., Raimondi F., Khraiche D., Bonnet D.
Necker Enfants Malades Hospital
Paris France

Background: Late coronary artery events are extremely rare in adults after the arterial switch (ASO) for transposition of the great arteries (TGA).

Methods: Over a period of 3 years, we evaluated semi quantitative myocardial perfusion using MRI in 11 adolescents (8 males, 3 females; mean age 15.4 years) presenting with chest pain at exercise (n=3) and/or with positive stress test during systematic follow-up (n=8). We excluded patients who had known coronary artery anomalies and one patient in whom a previously unknown left coronary stenosis was identified during MRI. Coronary anatomy was analyzed using 3D heart imaging. Semi-quantitative evaluation of myocardial perfusion was performed by the analysis of First-Pass perfusion images at rest and during dipyridamole infusion.

Results: Nine patients had normal coronary distribution and two single coronary artery. None of these patients had qualitative nor semi quantitative perfusion defect. All patients with normal coronary artery anatomy had an anterior reimplantation of left main stem immediately behind the pulmonary artery trunk but without stenosis. Only one patient with single coronary artery had anterior reimplantation of the coronary ostium.

Conclusions: Qualitative and semi quantitative perfusion was normal in adolescents with suspicion of myocardial ischemia during follow-up after the ASO for TGA. Anterior reimplantation of the left main stem was observed with a high frequency but did not translate into functional anomalies at MRI. These reassuring results do not exclude that regular follow-up of this population at risk for late cardiac events should be maintained.