

Clinical accuracy of annual cardiac computed tomography angiography in pediatric heart transplant recipients.

*Guillard O. (1), Rohnean A. (1), Tô N.T. (1), Paul J.F. (2), Houyel L. (1).
Hôpital Marie-Lannelongue, Le Plessis-Robinson, France (1);
Institut Mutualiste Montsouris, Paris, France (2)*

Introduction : Cardiac allograft vasculopathy (CAV) is a major cause of late heart graft failure. Because the transplanted heart often remains denervated, the first symptom of myocardial ischemia can be sudden death and routine periodic screening is thus recommended. Cardiac computed tomography angiography (CCTA) demonstrated a good sensibility and negative predictive value compared to coronary angiography in this indication, and is used for annual screening in our institution since September 2003.

The aim of this study was to evaluate clinical accuracy of CCTA annual screening in pediatric heart transplant recipients.

Method & Results : From September 2003 to November 2015, 175 CCTA were performed annually in 36 patients transplanted <18 years between 1988 and 2014. Mean age at transplantation was 10+/- 3.6 years; ischemic time was 208+/- 44.3 minutes; 9 patients had CMV mismatch. All had immunosuppressive tritherapy. Mean follow-up was 11.8 +/- 6.8 years. Age at first CCTA was 14.9 +/- 4.2 years; volume of contrast agent was 1.4 +/- 0.4 ml/kg; product length dose was 179.1 +/- 109.4 mGy.cm.

All CCTA were interpretable but 11 with uncertainties: poor visibility of distal coronary network in 7, artifacts in 4 (respiratory in 3, implantable cardiac defibrillator electrode in 1). During follow-up, 5 patients died, none had retransplantation, 8 had at least 1 episode of graft rejection, and 10 had chronic renal insufficiency due to anticalcineurin toxicity, with renal transplantation in 3.

No lesion was found on iterative CCTA in 32 patients (89%). Among them, none had coronary-related death, nor acute coronary syndrome. Coronary lesions occurred in 4 patients 2.9, 14.5, 22.6 and 24.7 years after cardiac transplantation. Coronary selective angiography confirmed CCTA lesions in 3; the fourth patient refused angiography. None needed coronary angioplasty; one died of acute graft rejection.

Conclusion : CAV is very uncommon in our cohort of pediatric heart transplant patients. No coronary-related events occurred in patients with negative CCTA. There was no false positive diagnosis although CCTA tends to overestimate the severity of lesions. Because of the low incidence of CAV in pediatric patients, we suggest that CCTA screening might be spaced out every 2 years.