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Antibody mediated rejection after paediatric heart transplant

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Introduction
Incidence and clinical significance of antibody-mediated rejection (AMR) after heart transplant (HT) in childhood remains limited due to relatively few paediatric recipients and a lack of routine surveillance.

Methods
All patients under 18 years diagnosed with AMR after HT were included. Routine endomyocardial biopsy (EMB) with C4d and immunohistochemistry were performed in all our patients after HT. AMR severity was assigned using the proposed 2013 ISHLT grading system for pathologic AMR.

Results
A total of 47 patients received a HT between 2008 and August 2018 in our hospital. We performed 311 EMB on them. 25% of the patients (12/47) were diagnosed with AMR, all during the first year after HT. 3 of the 12 patients died: 2 for AMR (6%) and one for noncardiac cause.
All patients had clinical or echocardiographic findings suggestive of rejection. The clinical presentation was low cardiac output (3 patients), right ventricle dysfunction (3 patients, 2 of them requiring ECMO), pure diastolic dysfunction 6 patients.
The grade of AMR was: pAMR (I+) in one patient, pAMR (H+) in one patient, pAMR2 in 8 patients (one died) and pAMR3 in 1 patient (who died). Anti-HLA antibodies were positive only in 2 patients. All patients received treatment with immunoglobulins, 2 with thymoglobulin, 4 with rituximab, 1 bortezomib and 2 with both rituximab and bortezomib. 2 of the 47 HT had positive PRA prior to transplant and received desensitization therapy. None of them developed AMR. Interestingly, six patients had C4D positive with no other evidence of AMR and therefore they were not diagnosed with AMR.
The requirement of mechanical assist devices before HT was not a risk factor for AMR in our patients (p0.5). Nevertheless, the patients who required mechanical circulation after HT had an increased risk of AMR (p0.02).

Conclusions
Regarding our population, DSA does not seem to be very sensible for AMR diagnosis. Clinical and echocardiographic changes are always present when an episode of AMR is recognized. In our patients, the requirement of mechanical circulatory support after but not before HT increases the risk for AMR.