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Immunoabsorption and plasmapheresis as treatment of the rejection after heart transplant

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The first heart transplant, at Bambino Gesù Pediatric Hospital, was carried out over 30 years ago; this practice still represents the gold standard for the treatment of terminal cardiomyopathies and complex congenital heart diseases, refractory to medical and/or surgical treatments.

However, important complications can arise, including those related to the development of rejection, either acute or chronic. The first episode generally occurs months after transplant, following an inflammatory response of T cells against the myocardium (cellular rejection), or because of the production of anti-HLA antibodies by the recipient's lymphocytes that identify the transplanted organ as a foreign body (antibody mediated rejection). Chronic rejection is characterized by a thickening of the wall of the coronary vessels, causing suffering of the new heart or a progressive fibrosis of the myocardium.

The first-rate treatment in our experience, aiming both at the prevention and treatment of rejection, consists in pharmacological therapy with steroids and immunosuppressive drugs. In the instance of this strategy's failure, previous experience in antibody mediated rejection, has promoted the use of monoclonal antibodies and apheresis, specifically plasmapheresis (a more aggressive method) and immunoabsorption.

These practices allow the selective elimination of cells or other harmful substances from blood, like immunoglobulins and immune complexes or inflammatory cytokines.

The care pathway for patients with graft rejection therefore provides a multidisciplinary approach. In all steps of this process, starting with post-operative management, close collaboration between different professionals is needed. In this process nurses take care of:

- patient reception in the ward;
- management of the vascular access dedicated to the procedure;
- educating the patient and parents;
- psychological impact of rejection;
- monitoring of pre and post treatment blood indices;
- monitoring and recognition of any adverse reactions;
- prevention of care-associated infections in a compromised patient.

Overall, organ rejection prevention and treatment have significantly advanced using knowledge, skills and synergies of all the professionals involved in the care management of patients. But several and bigger studies are needed to improve the pediatric experience in heart transplant fields.