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Results of CDC-XM and FCXM cross-match in highly sensitized patients with CKD

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Introduction

A compatibility test is a necessary test that is performed before kidney transplantation to confirm the compatibility of the donor and recipient to prevent acute antibody-mediated rejection. CDC-XM may be false-positive in recipients with an autoimmune disease or in patients who have previously been treated with desensitization protocols such as rituximab, antithymocyte globulin, or intravenous immunoglobulins.

Goal

Purpose of the study is to determine the effectiveness of using serum treated with the DTT reagent in a cross-match analysis to reduce the proportion of false positive results.

Material and Methods

5 patients with a high percentage of antibodies were studied and one patient with a negative HLA antibody status was taken as a control and received desensitizing therapy with a single administration of rituximab at a dose of 375 mg per body area.

Antibodies were determined using Luminex technology (Luminex Corp., USA) and the SAB (single antigen bead) method (OneLambda, USA). SAB analysis, CDC-XM and FCXM were performed before and after rituximab therapy. For XM analyses, lymphocytes were isolated on a density gradient using negative selection cell isolation technology using RosetteSep kits (StemCell technologies, Canada). FCXM was supplied with FlowDSA-XM™ reagents (OneLambda, USA) (Figure1).

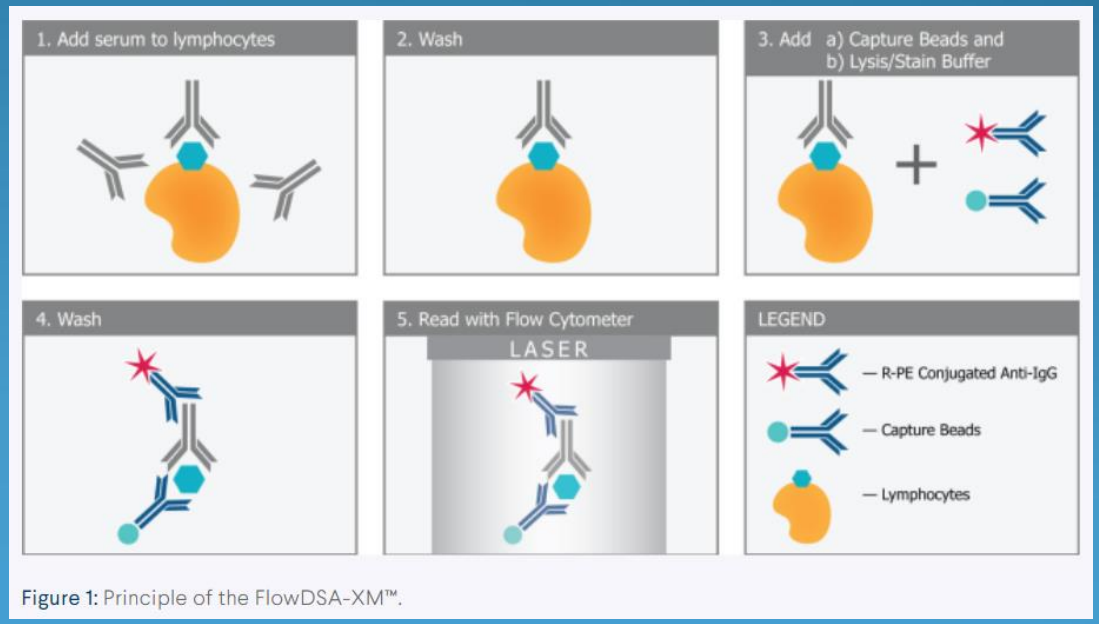

Figure 1: Principle of the FlowDSA-XM™.

Results and discussion

SAB results before rituximab therapy were positive for class I and class II antibodies and ranged from 3 to 91%. The result after therapy showed a decrease in the percentage of antibodies of both classes and ranged from 0 to 60%.

The results of the reaction of FCXM with serum obtained before and after rituximab therapy do not differ significantly. All results of the FCXM reaction are the same before and after trepapium, except for one patient in whom the cross-match with B cells was weakly positive before therapy, and showed a negative result after therapy. This is associated with a decrease in MFI levels of donor-specific antibodies DRB11 from 4901 to 1466 after receiving rituximab.

There is a big difference from the results of CDC-XM with FCXM delivered with B cells. FCXM for the second class showed a negative result in all cases, while in CDC-XM a positive result was seen in all cases with an intensity of +4 to +8 (Table 1).

№	ID patient	CDC-XM* cross-match results after therapy		FSXM cross-match after therapy	
		T-cell	B-cell	T-cell	B-cell
1	110	8+	8+	8+	-
2	112	2+	8+	-	-
3	119	-	4+	2+	-
4	124	8+	8+	8+	-
5	149	2+	8+	-	-
6	Neg control	-	8+	-	-

Table 1. Results of CDC-XM and FSXM cross-match after therapy

Conclusions

It is assumed that the presence of rituximab in the serum did not affect the result of FCXM and therefore this type of analysis may be optimal for use in patients who received rituximab therapy without waiting for the drug to be eliminated from the body.

Conversely, the CDC-XM assay should not be used in patients receiving rituximab and should only be administered after a drug washout time has been observed.

The results obtained are intermediate; due to the insufficient number of observations, these studies will continue. In addition, in the future, the use of anti-rituximab monoclonal antibodies (Anti-Rituximab Antibody) is envisaged to inhibit rituximab in the patient's serum before cross-match testing.

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