



# Anti-Vedolizumab abrogates false positive allogeneic T and B cell flow cytometry crossmatches in solid organ transplantation

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## Aim

Vedolizumab is a humanized monoclonal antibody that binds to  $\alpha 4 \beta 7$  integrin expressed on most leukocytes and is used for treatment of inflammatory bowel disease. The objective of this study was to assess the effect of recombinant anti-Vedolizumab treatment in vitro on allogeneic T and B cell flow cytometry crossmatches (FCXM) in solid organ transplantation.

## Methods

Serum samples from kidney transplant recipients that received parenteral therapeutic Vedolizumab monoclonal antibody injection 5 days prior to collection were used in the study. All serum samples were tested for the presence of HLA donor-specific antibodies (DSA) by Luminex single antigen beads assay (Thermo Fisher-One Lambda). FCXM were performed using surrogate lymphocytes and sera were treated with heat inactivation (HI, 56° C for 30 mins), dithiothreitol (DTT, 5 mM at 37° C for 15 mins), and inhibitory anti-idiotypic recombinant anti-Vedolizumab antibodies (HCA292, Bio-Rad, at 0.1, 0.05 and 0.025 mg/ml at room temperature for 15 min).

## Results

Parenteral administration of therapeutic Vedolizumab monoclonal antibodies caused false positive allogeneic T- and B-cell FCXM in the absence of HLA DSA. HI and DTT treatment of sera had no effect on the false positive T and B cell FCXM. However, recombinant anti-Vedolizumab antibodies successfully abrogated the false positive T and B cell FCXM at 0.1 mg/ml and 0.05 mg/ml concentrations (Table 1). Anti-Vedolizumab antibodies at 0.1 mg/ml concentration had no effect on the negative and positive crossmatch control serum.

Table 1

<u>Serum treatment</u>	<u>Flow cytometry crossmatch</u>	
	T cell	B cell
Heat inactivation	Positive	Positive
DTT	Positive	Positive
Anti-Vedolizumab 0.1 mg/ml	Negative	Negative
Anti-Vedolizumab 0.05 mg/ml	Negative	Negative
Anti-Vedolizumab 0.025 mg/ml	Positive	Positive

## Conclusion

This is the first report showing that therapeutic administration of Vedolizumab monoclonal antibodies cause false positive T and B cell FCXM in absence of HLA DSA which can preclude from proceeding with allogeneic transplantation. In addition, recombinant anti-Vedolizumab antibodies abrogated false positive allogeneic T and B cell FCXM.