ABSTRACT

This work focuses on mastering the technique of examining anti-HLA antibodies using the multiplex Luminex method. The aim was to become proficient in working with analytical software capable of evaluating the specificity and levels of individual anti-HLA antibodies in patients' sera before and after kidney transplantation. Additionally, cut-off values for screening for anti-HLA antibodies in the assessed patient cohort were determined. Furthermore, an analysis of sensitization to individual HLA antigens was performed in a group of patients with low antibody levels.

In the theoretical part of this work, I addressed the major histocompatibility system (HLA system) and its significance in transplantology. I also focused on the issues of transplant immunity and the principles of alloreactivity and rejection. I discussed the origin and significance of HLA antibodies and examined various methods for analyzing anti-HLA antibodies, particularly the multiplex Luminex method.

In the experimental part, conducted at the Department of Clinical Immunology and Allergology in Hradec Kralove, I analyzed antibodies targeting HLA class I and II antigens using the multiplex Luminex method. Screening index values were monitored for both HLA classes. In subsequent typing examinations, MFI values were observed for positive index values. Additionally, antibodies against individual HLA specificities were monitored. Patients were followed for the year 2023 and divided into 4 groups based on index values, which were thoroughly evaluated.

It was found that most patients exhibited positive screening for HLA antibodies. Positivity was most frequently directed against HLA-B antigens in class I and against HLA-DQ in class II. The percentage of patients who developed DSA did not even reach 50%. The cut-off value for screening examination and overall assessment of antibody examination using the Luminex method was verified.

KEYWORDS: donor-specific antibodies, HLA system, HLA antibodies, index, Luminex, MFI, rejection, screening, typing