THE EGYPTIAN JOURNAL OF IMMUNOLOGY Vol. 12(2), 2005
Page: 77-89

Comparative study between cytotoxicity and flowcytometry crossmatches before and after renal transplantation

Afaf S Abdel Rahman [1], Nehal M A Fahim, Abeer A El Sayed, Soha A R El Hady, Yasser S Ahmad

Department of Microbiology & Immunology, Faculty of Medicine, Ain Shams University, Cairo, Egypt.

PMID: 17977213

Renal transplantation, in most countries, is based on human leukocyte antigen (HLA) matching of the donor kidney with the recipient. Traditional human leukocyte antigen matching is based on defining human leukocyte antigen specificities by antibodies utilizing cytotoxicity crossmatch techniques. Newer techniques have emerged, which challenge the accuracy of serological typing and crossmatching. We compared the results of the standard complement-dependent cytotoxicity crossmatch (CDCXM) with the anti-human globulin augmented cytotoxicity (AHG-CDC), and Flowcytometry crossmatch (FCXM) for the detection of anti-HLA antibodies in 150 pre-transplant patients. The development of post-transplantation sensitization was screened utilizing these three techniques within two weeks post-operative and correlated with rejection episodes. Comparison between the results of CDCXM and AHG-CDC in 150 recipients, revealed no significant correlation ($P>0.05$). When comparing these results with that of FCXM in 50 recipients a significant correlation was shown ($P<0.05$). Relative to CDCXM, the sensitivity of AHG-CDC was 100%, specificity 97.4%, positive predictive value 92.3%, and negative predictive value 100%. On the other hand, the sensitivity of FCXM was 100%, specificity 76.3%, positive predictive value 57.1%, and negative predictive value 100%. According to the results of CDCXM, AHG-CDC, and FCXM, no difference was detected between pre- and posttransplant anti-HLA sensitization within two weeks after the operation. Patients with negative cytotoxicity crossmatch (CDCXM and AHG-CDC) and positive FCXM may have an increased risk of early graft loss and may represent a relative contraindication to transplantation. Given the important theoretical advantages of FCXM over the CDC XM, further testing of the clinical relevance is warranted.