



Service Priorities and Programmes

Electronic Presentations

Convention ID: 780

Submitting author: Miss Wing Kan WONG

Post title: Advanced Practice Nurse, Queen Mary Hospital, HKWC

Innovative Method of Calculated Panel Reactive Antibody Calculation and its Application on Kidney Allograft Allocation

Wong WKM (1), Chan YP (1), Tang WML (1), Guo MB (2), Yang WL (2), Li KTP,(3), Leung CB (4), Chau KF (5), Lam CKJ(6), Yeung KMN (6), Kwok SYJ (1)

(1) Division of Transplantation and Immunogenetics, Department of Pathology and Clinical Biochemistry, Queen Mary Hospital, Hong Kong (2) Department of Paediatrics and Adolescent Medicine, The University of Hong Kong (3) Department of Medicine and Therapeutics, Prince of Wales Hospital and Chair, CRC and Renal Registry Steering Group, Hong Kong (4) Department of Medicine and Therapeutics, Prince of Wales Hospital and Chair, Renal Registry Implementation Team, Hong Kong (5) Department of Medicine, Queen Elizabeth Hospital, Hong Kong (6) Information Technology and Health Informatics Division, Hospital Authority, Hong Kong

Keywords:

Anti-HLA Antibody

Sensitization

Calculated Panel Reactive Antibody

Kidney Allograft Allocation System

Introduction

Periodical Antibody Screening detecting anti-Human Leukocyte Antigen (HLA) antibodies allow better kidney allograft allocation for kidney patients in waitlist. Panel Reactive Antibody (PRA) which used to assess the sensitization level of renal patients was replaced by Calculated PRA (cPRA) based on Hardy-Weinberg equilibrium in 2009 in US. The US Organ Procurement and Transplant Network (OPTN) has adopted the cPRA scores in deceased kidney allograft allocation system. We introduce the simplified method of calculating cPRA for deceased kidney allocation application in Hong Kong.

Objectives

To prove an innovative method of cPRA calculation comparable with the cPRA calculations based on Hardy-Weinberg equilibrium

Methodology

563 Hong Kong Chinese deceased kidney donors for past 20 years were used for HLA frequencies based on OPTN formulae. 613 kidney waitlist candidates with sensitisation in Organ Registry Transplant System under Central Renal Committee of Hospital Authority were used for cPRA frequency cPRA(freq) calculation. By applying the built in Donor Filtering Out Tool from Organ Registry Transplant System, cPRA(filter) could be calculated by counting the number of filter out count if patient had at least one anti-HLA Antibody against any mismatched antigen of a deceased

donor. The value was the percentage of filter out count over 563 deceased donors. cPRA(freq) and cPRA(filter) were compared and agreement between the two methods by Bland-Altman plot and Lin's Correlation Coefficient were plotted.

Result

cPRA(freq) and cPRA(filter) scores were highly equivalent, Standard Deviation of bias is 0.6%. Limit of agreement is 0.9% to - 1.5% difference between cPRA(filter) and cPRA(Freq). Lin's Correlation coefficient is 1.000. This is the first study on cPRA calculation application in Hong Kong. cPRA(freq) and cPRA(filter) scores are virtually in perfect agreement. Hong Kong has the most favourable and built in Donor Filtering Out Tool for HLA matching donor with recipient according to matching score calculation. The cPRA(filter) can have the advantage of accumulated real-time calculation of on-going deceased donor and enable efficient periodic update for cPRA scores which can have the application of score adjustment in the kidney allograft allocation system for highly sensitised renal patients or even in heart and lung recipients.