ALLOCATION STRATEGY FOR KIDNEY ALLOGRAFTS IN TRANSPLANTATION TO PREVENT ANTIBODY MEDIATED REJECTION

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OBJECTIVES

Kidney transplant candidates sensitized to a wide variety of HLA antigens are disadvantaged by a reduced chance of receiving crossmatch negative organ and prolonged waiting times. Despite improved long-term outcomes of kidney transplants, graft loss due to chronic rejection still remains a major problem. One of several interventions that can increase the likelihood of transplantation and reduce occurrence of antibody mediated rejection (AMR) is implementation of new allocation strategies.
The aim of the study was to determine whether the introduction of the new allocation criteria led to reduction in the number of positive crossmatch in kidney transplant recipients and whether this allocation system reduced the incidence of AMR.

METHODS

During the study period from March 2011 until December 2015, 948 patients were examined for kidney transplantation. In 3/2011 – 3/2014 there was no other limit than positive complement-dependent cytotoxicity crossmatch (CDCXM) before first kidney transplantation, in retransplatation we used Luminex-based definition of unacceptable HLA-antigen mismatches (UAM) for allocation, while since 4/2014 kidney allocation was modified using donor specific antibodies (DSA) examined by Luminex method in all patients. Identification of HLA antibodies became part of the examination required for inclusion on the waiting list for kidney transplantation. For transplantation we accepted patients with DSA maximum 5000 MFI. The incidence of positive CDCXM and antibody mediated rejection within first month after transplantation were evaluated.

Patients demographics

n	496	288
	Group 1 3/2011 – 3/2014	Group 2 4/2014 – 12/2015
Sex (M/F)	333/261	194/159
PRA max	23,6 ± 29,1	25,4 ± 31,6
HLA mismatch no. (%)		
0 – 2	117 (24)	73 (25)
3 – 4	308 (62)	171 (60)
5 - 6	71 (14)	44 (15)
First transplantation no. (%)	434 (87,5)	228 (79,2)
Retransplantation no. (%)	62 (12,5)	60 (20,8)*
Donor age	46,0 ± 13,7	47,8 ± 14,8

Tab. 1.
Statistical analysis was performed between Group 1 and 2. * p = 0,0029

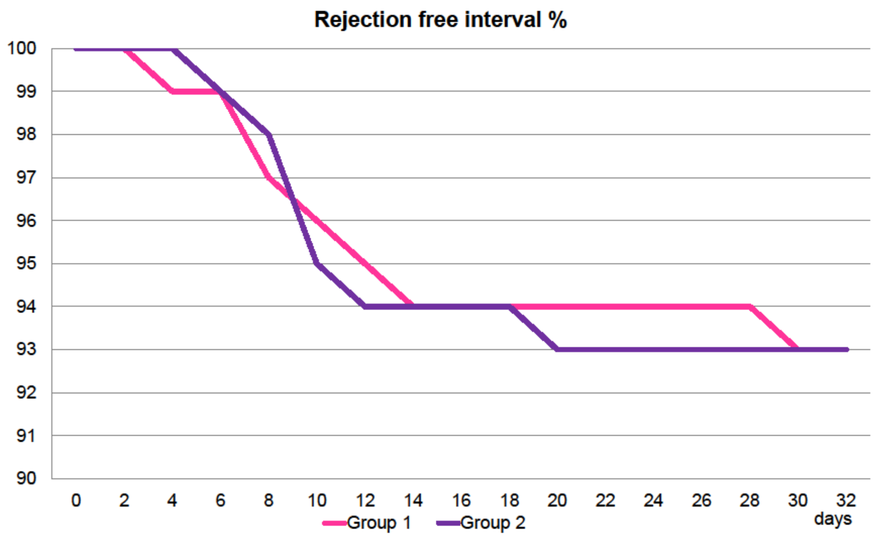

Fig 4.
A comparison of the incidence of antibody mediated rejection during the first month after transplantation in two groups with a different allocation criteria, p = 0,2253..

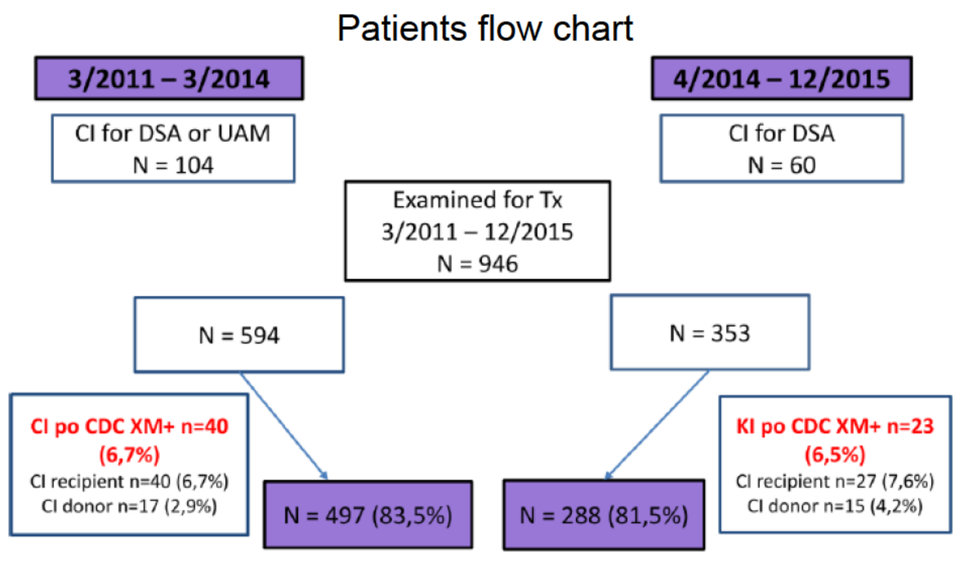

Fig 1
After implementation of new allocation system the incidence of positive CDCXM was comparable (6,7% vs. 6,5%).
CI (Contraindication), DSA (donor specific antigen), Tx (transplantation), CDC CM+ (complement dependent crossmatch positive).

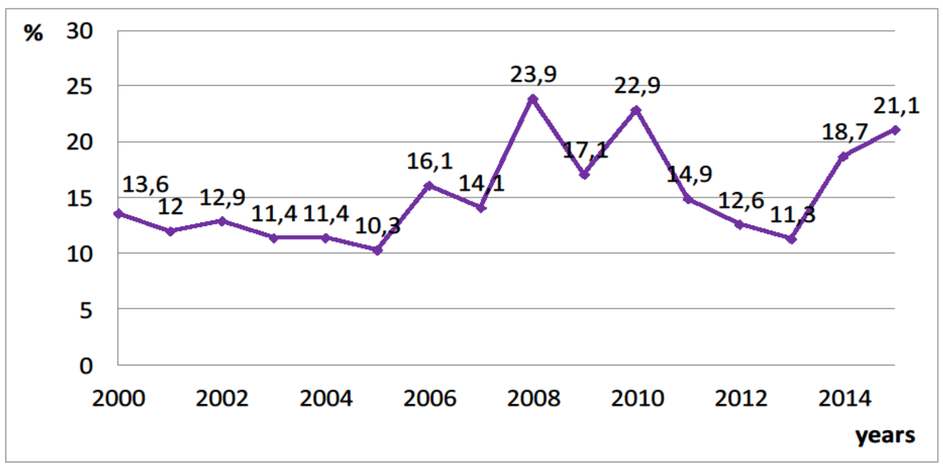

Fig 3.
After implementation of new allocation system, the proportion of performed retransplantations from all deceased donor kidney transplantations has increased (13% vs. 21%; p = 0,0008)
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RESULTS

For transplantation were examined 595 patients in 3/2011-3/2014 and 353 in 4/2014-12/2015 (Tab.1). After implementation of new allocation system the incidence of positive CDCXM was comparable (6,7% vs. 6,5%), contraindications for transplantation because of illness of the patient was similar (6,7% vs.7,6%) or because of marginal donor kidney biopsy as well (2,9% vs. 4,2%) (Fig.1). After implementation of new allocation system, the proportion of performed retransplantations from all deceased donor kidney transplantations has increased (13% vs. 21%; p = 0,0008) (Fig.3). There was a similar incidence of AMR in first month after transplantation in both group (p=1) (Fig.4).

CONCLUSIONS

Based on our preliminary data, virtual crossmatch positivity defined as MFI>5000 is not suitable method for allocation strategy as this is neither associated with better prediction of CDCXM positivity nor reduce the incidence of acute AMR in kidney transplant recipients.

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