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## **Impact of body mass index and pre-sensitization in kidney transplant recipients on the long term allograft survival**

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**Objectives:** The aim of this study is to investigate the relationship between obesity and pretransplant sensitization status.

**Methods:** This study was retrospective, observational, and single center design. From January 2010 to December 2018, patients who underwent ABO matched living donor kidney transplantation at Seoul St. Mary's Hospital were enrolled. BMI was calculated on the basis of height and weight at the time of transplantation. Pre-sensitized group was defined when the median fluorescence intensity of pre-transplant donor specific anti-HLA antibody (HLA-DSA) was higher than 3000. The primary outcome was the death-censored graft loss rate and the secondary outcomes were the overall graft loss rate, patient mortality rate, and biopsy-proven acute rejection rate.

**Results:** Of total 682 patients, 621 patients were non-presensitized group and 61 patients were presensitized group. Divided into 4 groups according to presensitization status and BMI, the death censored graft failure rate (19.0%,  $P = 0.044$ ) in the presensitized with high BMI group was the highest among the 4 groups. Furthermore, the hazard ratio (HR) of presensitized with high BMI was 4.607 (95% confidence interval, 1.243-17.078,  $P=0.022$ ) with statistical significance in multivariate Cox regression analysis with interaction between BMI and presensitization status ( $P=0.009$ ). In addition, in the analysis of the time-dependent change in the estimated glomerular filtration rate (GFR) in 4 groups, the presensitized with high BMI group showed a sharp decrease compared to other groups from 2 years after transplantation.

**Conclusions:** Living donor kidney transplantation recipients who were pre-sensitized and whose BMI were above 22.7 have a greater risk of allograft loss than those who do not. Our results suggest that pre-sensitization and high BMI may have a synergistic adverse impact on long-term post-transplant allograft survivals.