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Analysis of utility and fairness of kidney allocation using K-KDPI and K-EPTS systems in Korea.

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Objectives: In this study, using the new Korean K-KDPI and K-EPTS systems, the kidney allocation trends in Korea were investigated and the prognosis according to the K-KDPI/K-EPTS matching was evaluated.

Methods: Of the total 2,395 donors, low (0-70) and high (71-100) K-KDPI donors were 1935 and 460, respectively, and low (0-20) and high (21-100) K-EPTS recipients were 653 and 1742, respectively.

Results: Over the years, there has been a significant increase in donors with high K-KDPI and recipients with very high (81-100) K-EPTS. No significant association was observed between K-KDPI and K-EPTS score from 2014 to 2020, and there was no difference by year. About 25% of high K-KDPI donor's kidneys were transplanted into very high K-EPTS recipients, and more than 30% of low K-KDPI donor's kidneys were transplanted into low K-EPTS recipients. However, KT from low K-KDPI to very high K-EPTS showed a slight increase every year.
Graft loss was observed in 89 patients, and rejection was the most common cause. When the kidney allocation was divided into four groups (low to low, low to high, high to low, high to high), graft survival was not significantly different between groups. However, the graft function on 6 months, 1, 2, and 3 years after KT showed a significant difference; the low to low group showed the best and the high to high group showed the lowest. Interestingly only in the high to low group, the graft function decreased over time.

Conclusions: In conclusion, no trend of "low to low" was observed, due to the fairness-based allocation policy. The graft function in high to high group showed the lowest, but acceptable graft survival. In consideration of the aging population and the shortage of donors, these data can be useful for the development of the allocation system that balances utility and fairness based on K-KDPI/K-EPTS.