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Time-series variations in calculated panel reactive antibody among kidney transplant candidates

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Background: The Calculated Panel Reactive Antibody (cPRA) calculator has been used to evaluate kidney transplant candidates. However, the time-series variations in cPRA levels and the optimal cPRA evaluation interval remain unclear, potentially resulting in unnecessary tests and increased medical cost.

Method: We retrospectively examined the trajectory of cPRA among 118 end-stage renal disease (ESRD) patients wait-listed for kidney transplantation at our department between January 2011 and December 2014. We measured cPRA levels every 3 months. cPRA levels were then categorized into 0–19%, 20–79%, 80–97%, and 98–100%. Increase or decrease in cPRA levels >10% was used as the primary outcome.

Results: Among 118 wait-listed patients, 50, 28, 19, and 21 patients were categorized as 0–19%, 20–79%, 80–97%, and 98–100%, respectively. One patient with 0% baseline cPRA experienced an increase cPRA levels to 36% at Month 6 but then spontaneously returned to 0% at Month 9. Another patient decreased cPRA from 17% at baseline to 0% at Month 36. Among the other 48 patients in the 0–19% cPRA category, cPRA changes were within 10%. Similarly, cPRA did not change more than 10% among patients in the 98–100% category with an exception of one patient who decreased cPRA from 98% at baseline to 54% at Month 33. Variations in cPRA >10% were observed among 16 (57%) and 9 (47%) patients in the 20–79% and 80–97% category, respectively. Decrease in cPRA was more frequent than increase in cPRA in these middle categories. In particular about half of those with cPRA >80% showed a decline over time without any intervention.

Conclusion: Many wait-listed kidney transplant candidates show a large fluctuation in cPRA over time, while high cPRA tend to decline over time. Further studies are needed to identify predicting factors against cPRA changes and to determine the optimal cPRA evaluation interval that reduces costs and improve efficiency of limited medical resources.

