COMPLESOME AFFECTS THE OUTCOME AFTER INCIDENT KIDNEY TRANSPLANTATION

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INTRODUCTION AND AIMS: The complement system has recently been recognized as a crucial pathogenic mediator of various kidney diseases and after kidney transplantation. Activation of the complement cascade cumulates into the generation of anaphylatoxins (e.g., C3a and C5a), opsonins (e.g., C3b), and pore-forming membrane attack complex (i.e., C5b-9). The objective was to investigate whether the complementsome including plasma complement factors obtained at the first postoperative days predicted the allograft function after kidney transplantation.

METHODS: We prospective investigated a total of 181 incident kidney transplant recipients. We analyzed plasma complementsome in individual samples by quantitative proteomics using stable isotope labeling of plasma samples with isobaric tags for relative and absolute quantitation (iTRAQ) combined with nano-Liquid-Chromatography-Tandem Mass-Spectrometry (nano-LC-MSMS). Estimated glomerular filtration rate (eGFR) in kidney recipients was determined four weeks after transplantation using the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation.

RESULTS: 30 complement factors and regulatory proteins were simultaneously quantified in 181 incident kidney transplant recipients. Recipients from deceased donors showed significantly higher complement factor C3 levels (Median, 1.08; IQR, 1.00 to 1.21) compared to AB0-incompatible living donors (Median, 0.97; IQR, 0.90 to 1.04; p<0.001) or AB0-compatible living donors (Median, 1.01; IQR, 0.93 to 1.11; p<0.001 by Kruskal-Wallis test with Dunn’s multiple comparisons test). Deceased donors also showed significantly higher complement factor C9 levels (Median, 1.18; IQR, 0.97 to 1.34) compared to AB0-incompatible living donors (Median, 0.89; IQR, 0.82 to 0.95; p<0.001) or AB0-compatible living donors (Median, 0.99; IQR, 0.87 to 1.13; p<0.001 by Kruskal-Wallis test with Dunn’s multiple comparisons test).

CONCLUSIONS: Increased complement factor levels are associated with worse outcome after kidney transplantation.