Light Chain Deposition Disease (LCDD) Recurrence Post Kidney Transplant

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Introduction: Advanced Renal disease from LCDD does benefit from renal transplant but allograft survival may be limited by LCDD recurrence. We report a case to support this.

Case Description: 57-yr male with history of multiple myeloma status post autologous peripheral blood stem cell transplantation (PBSCT) and ESRD due to IgG kappa LCDD who got a deceased donor kidney transplant (DDKT) and developed recurrence of LCDD. Patient evaluated 4 years prior for creatinine 3.43 mg/dL, proteinuria 7.4/g/day, kappa light chain (KLC) 118.2 mg/dL, lambda light chain (LLC) 13.8 mg/dL, K/L ratio 8.5, serum protein electrophoresis (SPEP) with M-spike in gamma region, UPEP showed selective glomerular proteinuria, urine immunofixation with 2% of total protein being IgG kappa. Kidney biopsy showed diffuse tubular and glomerular basement membrane staining for kappa light chain (KLC) +, weak basement membrane staining for IgG and albumin +1, moderate -severe fibrosis, negative amyloid. Bone marrow biopsy: 30-40%, hypocellularity, atypical plasmacytosis, plasma cells with CD138 + to 3% of marrow cellularity, CD56 +, and KLC restricted. Had 3 cycles of chemotherapy with partial response and autologous PBSCT to achieve complete response 1. Two years later, bone marrow and kidney biopsies showed evidence of disease relapse. Had another cycle of chemotherapy and salvage PBSCT, follow up bone marrow biopsy negative for plasma cell abnormality. Started on PD due to worsening renal function. Allograft biopsy 9 months post DDKT done due to elevated serum creatinine and proteinuria showed recurrent LCDD (tubular basement membrane thickening and mesangial expansion with nodular accentuation, 3+ Linear staining for KLC, negative for lambda, focal glomerular staining for albumin 1+, Electron dense fine granular deposits along glomerular basement membrane) similar to native kidney biopsy prior to PBSCT. SPEP with M-spike 0.4 g/dL K/L elevated at 11. He was started on chemotherapy for LCDD recurrence. Renal Allograft failed at 10 months post-DDKT and patient returned to Hemodialysis

Discussion: This case illustrates that renal allograft survival is reduced in LCDD patients no matter the treatment used to achieve sustained hematologic response and this supports the need for more studies to establish the pathophysiologic mechanisms underlying LCDD recurrence in renal allograft which may serve as therapeutic targets.

Hypocalbuminemia Is a Risk Factor for Invasive Fungal Infections and Worse Outcomes in Infected Kidney Transplant Recipients

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Background: Serum albumin is a marker of overall health status. It is unknown if kidney transplant recipients (KTRs) with hypocalbuminemia are at an increased risk of invasive fungal infection (IFI) specifically, blastomycosis, coccidiodomycosis, histoplasmosis, aspergillosis, and cryptococcus.

Methods: In this retrospective observational cohort study, all adult KTRs transplanted between 01/01/2001 and 12/31/2017 were included with serum albumin measured 3-6 months before selected IFIs and compared to matched controls using incident density sampling. KTRs were stratified into three pre-infection albumin levels: normal albumin ≥4.0 g/dL, mild hypocalbuminemia 3.0-<4 g/dL, and significant hypocalbuminemia <3.0 g/dL. Incidence models per 100 person-years and Cox proportional hazards were used to compare outcomes between groups.

Results: 113 KTRs with IFI and 348 controls were included in the study. Mean serum albumin level at the time of IFI was 3.1±0.62 g/dL. The majority of infected KTRs had aspergillosis (48.7%) followed by endemic fungal and cryptococcus infections. Infected KTRs were older at transplant (56±11 vs 53±14 years, p=0.02) with a higher incidence of delayed graft function (23.9% vs 5.8%, p<0.001). Basalinean immunosuppression was more common in those with IFI (55.8% vs 47.4%, p=0.01). Calcineurin-inhibitor maintenance immunosuppression prevailed overall, but differed (85.9% vs 96.9%, p=0.001). Infected KTRs had lower serum albumin level with 71.7% normal, 50.4% mild, and 42.5% significant hypocalbuminemia; while in controls 18.7% had normal, 75.9% mild and only 5.5% significant hypocalbuminemia (p=0.001). The incidence rate of IFIs among normal, mild, and significant hypocalbuminemia was 3.6/100, 7.8/100, and 29.3 person-years, respectively. After multivariate analysis, mild hypocalbuminemia (HR: 2.2, 95%CI: 1.02-4.7) and significant hypocalbuminemia (HR: 5.0 95%CI: 2.3-11.2) had a significantly higher risk of IFI than normal albumin. A similar pattern of mortality and graft failure with hypocalbuminemia after IFI was observed.

Conclusions: These results suggest that hypocalbuminemia is associated with an increased risk of IFI as well as subsequent graft loss and mortality.