Anisah Khan, J Diabetes Metab 2018, Volume 9
DOI: 10.4172/2155-6156-C4-088

27th European Diabetes Congress

June 20-21, 2018 | Rome, Italy

Diabetic foot induced sepsis and renal function deterioration: Is there a link?

Anisah Khan[a]
[a]King's College London, UK

Sepsis induced acute kidney injury (AKI) in patients with diabetic chronic kidney disease (CKD), is a known occurrence in the clinical setting. The mechanism predisposing these patients to deterioration in renal function, involve a pro-inflammatory state through the induction of cytokines. Hemodynamic instability, due to the vasodilatory effect of these cytokines on the vasculature of patients, may lead to a pre-renal cause for the subsequent AKI. This is exacerbated by antihypertensive medications administered to diabetic patients with proteinuria and/or hypertension. Vascular permeability increases in CKD mice with sepsis. This is via elevated serum and renal podocyte levels of vascular endothelial growth factor (VEGF). VEGF disrupts the glomerular filtration barrier, while widening the fenestrae between endothelial cells in the glomerulus in mice with CKD and sepsis. A mechanism suggested for its elevation is due to the reduced NO concentration in mice with sepsis. There is a dampened immune defense in humans and mice models of CKD independent of sepsis due to splenic apoptosis. This process leads to the release of HMGB1 which increases oxidative stress by binding onto RAGE and TLR receptors. Current therapeutic strategies implemented in animal models as well as humans have proven effective, however have not yet reached phase 3 trials. This includes VEGF inhibition and statins, which both decrease vascular permeability. Statins have an additive effect of decreasing serum TNFα levels. Nicorandil, a NO donor, was found to have renoprotective effects in diabetic mice in comparison to non-diabetic mice. Anti-HMGB1 administered to septic mice with CKD has improved hemodynamic stability and reduced the severity of sepsis. TLR4 inhibitors have proven effective at reducing the severity of sepsis in patients up to phase 2 trials. Further studies are required to assess the effectivity of these drugs in diabetic patients with sepsis, while eliciting at what specific time in the progression of sepsis, is therapeutic intervention most beneficial.

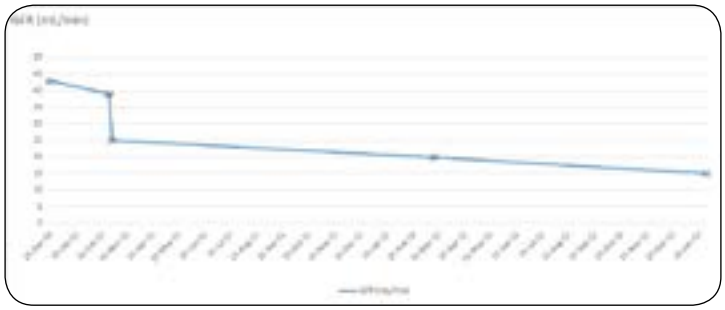

Figure 1: Patient Ms. JM's decline in GFR (mL/min) after foot induced sepsis

Biography

Anisah Khan is currently in her fourth year of Medicine, with a passion in endocrine related conditions, in particular diabetes. Her current research is based on case study witnessed in the follow up clinic. She dedicates her time in teaching younger medical students aspects of the MBBS curriculum through tutoring programmes. She is a Writer for The Medical Student, where she submits regular write ups on aspects of medical education and research.

Anisah.khan@kcl.ac.uk