Utility of TTV Viral load as a biomarker of immunocompetence in Transplantation

Anti-rejection medications are crucial part of management post-transplantation to reduce risk of rejection. These function by tempering the immune activity thereby allowing for the graft(s) to function. If over-immunosuppressed, patients are at significant risk of infections/cancers and rejections if under-immunosuppressed. Cancers and infections are the 2 most common cause of mortality post-transplantation.

TTV is widely prevalent virus in humans and is not known to cause disease. This is considered a component of ‘human-biome’. There is an inverse correlation between immunocompetence and TTV. This relation offers a rationale for using TTV load as a surrogate marker of state of immunity post-transplantation. If confirmed, this can provide huge opportunity in routine patientcare. This could help reduce over- and under-immunosuppression, thereby improving rates of rejections, infections, and cancers. However, studies of TTV are lacking in UK.

We propose a study piggy-backed onto the existing human microbiome study, currently underway in Manchester, through collaboration between Transplantation Team and the University of Manchester. TTV testing is standardised lately by the Biomerieux Diagnostics who will provide the technical support and will be able to set up the testing in our Laboratory. This gives a right combination of partnership between various experts including clinicians involved in direct patient care, Researchers and Scientists in University and biomedical diagnostic company and will put us at the forefront of developing the concept of immunocompetence. This study will be the first in UK to estimate prevalence of TTV in UK, and in post-transplant setting we will study the association of TTV viral load with rejections and infections. We envisage developing further larger studies following the pilot data and potentially develop algorithms to use TTV load as a tool to prevent rejection and infection. Our aim is to save the transplanted kidney with optimal immunosuppression as long as possible.