VITAMIN D DEFICIENCY DOES NOT INCREASE THE RISK OF POST-LIVER TRANSPLANT ALLOGRAFT CELLULAR REJECTION (ACR)

Introduction Vitamin D deficiency is prevalent in cirrhotic patients, and is increasingly associated with undesirable outcomes including increased rates of infection and higher mortality rates. It has also been documented that, owing to its supposed role in immune regulation, there may be a correlation between vitamin D deficiency pre-liver transplant and an increased risk of graft rejection (independent of other factors such as CMV rates which influence rejection risk). It has been postulated that this correlation may be because vitamin D allows a level of immune tolerance towards the graft. Nevertheless, the evidence is not conclusive. Animal models have demonstrated that calcitriol administration can prevent ACR and improve survival, but this has not yet been trialled in humans. Few retrospective studies have also looked at correlations between vitamin D deficiency and ACR rates with differing results. We aimed to review outcomes of patients undergoing liver transplant at a tertiary liver centre, and evaluate if any such correlation with vitamin D and graft rejection exists.

Methods This is a retrospective study of patients with chronic liver disease awaiting liver transplantation from 2015–2017. Data collated included: demographic data, vitamin D levels within 6 months pre-liver transplant, use of vitamin D supplementation, post-operative rates of CMV, and episodes of cellular rejection (biopsy-proven).

Results 299 patients were included (72% male). Aetiology was ALD (n=96), viral hepatitis (n=66), PBC/PSC (n=62), NAFLD (n=34), AIH (n=22), and ‘other’ (n=19). Vitamin D deficiency affected 62% of the cohort. 157/299 patients had so far been transplanted at the time of data collection, and of these 115/157 had vitamin D levels recorded within 6 months pre-transplant. Total rejection rates were 20% (23/157) in the first year post-transplant, with the majority being episodes of early rejection (0–2 months). There was no significant association between vitamin D deficiency pre-transplant and the risk of cellular rejection, with 25% of those with vitamin D levels <25nmol/L pre-transplant experiencing rejection, in comparison to 14% of those with a normal vitamin D (>50nmol/L) (p=0.2). No correlation was seen with vitamin D and CMV rates, or CMV and rejection rates. Prescribing cholecalciferol either pre-transplant or in the first month post-transplant did not confer any significant reduction in the risk of rejection.

Conclusion Our results are contrary to the limited published data showing increased rates of graft rejection with vitamin D deficiency. There is a pressing need for a prospective study to confirm if a true correlation exists between vitamin D deficiency and risk of cellular rejection, and if vitamin D supplementation would reduce this risk.