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Efficacy of Tolvaptan in the treatment of Autosomal Dominant Polycystic Kidney disease in maintaining residual renal funtion– a single centre experience

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Introduction
Tolvaptan is approved for treating Autosomal Dominant Polycystic Kidney Disease (ADPKD). The TEMPO trial showed slowing of kidney growth (Total kidney volume (TKV)), and reduced rate of kidney function decline in patients treated with tolvaptan.[1] NICE advises patients with stage 2/3 chronic kidney disease (CKD) with evidence of progressing disease were eligible for tolvaptan.[2]
This project aimed at evaluating the efficacy of tolvaptan in a single nephrology department to assess whether the benefits of tolvaptan are reproduced in our patient population.

Method
We identified all patients with ADPKD treated with tolvaptan in the ADPKD clinic. Baseline characteristics were identified to ensure tolvaptan was started according to NICE. 45 patients were started on Tolvaptan but among them, 14 discontinued. Currently 31 patients are on Tolvapan therapy. 30 patients had been on tolvaptan for over 6 months were included for efficacy analysis.
Data was collected from the clinic database, letters, and blood results. Data was collected at 3, 6, 9, 12, 18- and 24-month intervals.

Results
15 males and 15 females with mean age of 50 years were on tolvaptan for over 6 months.
Baseline eGFR prior to commencing tolvaptan ranged from 30-84ml/min/1.73m2 (mean 50).
eGFR at 1 year for the 21 patients that had been on tolvaptan for 1 year ranged from 26-88ml/min/1.73m2 with mean 46. eGFR at 2 years for the 6 patients who had been on tolvaptan for 2 years ranged from 34-55ml/min/1.73m2 with mean eGFR 42. The fewer number over time reflects tolvaptan being discontinued or being on tolvaptan for under the specified timeframe.
Of the 21 patients that had been on tolvaptan for 1 year, the change in eGFR at 1 year ranged from -7 to +17ml/min/1.73m2 with a median change of -3.
Of the 6 patients that had been on tolvaptan for 2 years, the change in eGFR at 2 years ranged from -7 to 0 with a median change of -5.
Of the 14 that discontinued tolvaptan, 2 discontinued due to worsening renal function.

Discussion
In this retrospective study, tolvaptan was tolerated well, with only 5 patients discontinuing due to side effects.
The study shows a slowing of decline in kidney function with a mean decline of eGFR of 2ml/min/1.73m2 after 1 year and 8 ml/min/1.73m2 after 2 years. This, however, includes fewer patients being analysed over time due to differences in the stage each patient was at the time of our analysis, due to patients being commenced on tolvaptan at different times. The slowing of kidney function decline reflects that of the TEMPO study.

This study, however, does not look at slowing of the increase in TKV, which may be associated with slowing of kidney function decline. Furthermore, given the small sample size and short follow-up period, ongoing data collection is required to make comparisons with previous studies.

Conclusion

Our study findings suggest that those who have tolerated Tolvaptan, there is evidence of benefit with stabilisation and slower rate of progression, but this require further evaluation with larger study group and longer follow-up.