

P251

## P251 -Oral vs intravenous (IV) pulsed alfacalcidol for the treatment of secondary hyperparathyroidism (SHPT) in haemodialysis patients – an audit of efficacy and cost

Dr Qiaoling Zhou<sup>1</sup>, Miss Sally Pugh<sup>2</sup>, Mr Israr Baig<sup>3</sup>, Dr Jim Moriarty<sup>4</sup>

<sup>1</sup>Renal Depart., Gloucestershire Hospital Nhs Foundation Trust, Gloucester, United Kingdom, <sup>2</sup>Renal Depart., Gloucestershire Hospital Nhs Foundation Trust, Gloucester, United Kingdom, <sup>3</sup>Pharmacy Depart., Gloucestershire Hospital Nhs Foundation Trust, Gloucester, United Kingdom, <sup>4</sup>Renal Depart., Gloucestershire Hospital Nhs Foundation Trust, Gloucester, United Kingdom

### Introduction:

Activated vitamin D remains the mainstay of treatment for SHPT in haemodialysis patients. There is variable evidence regarding the optimal route of administration of vitamin-D, with some suggesting IV routes superior to oral 1,2. Others found no difference between the two 3,4,5,6. We compared the efficacy of pulsed oral vs IV alfacalcidol in the control of SHPT for haemodialysis patients, through the measurements of monthly bone profile. Our hypothesis was that pulsed oral alfacalcidol could be as effective as IV for SHPT control.

### Methods:

Eleven chronic haemodialysis patients receiving IV alfacalcidol three times a week during dialysis were included in our sample. All patients were switched to oral alfacalcidol in the second week of Oct. 2018 at the same dose as previous IV therapy. Bone profile including calcium and phosphate were measured monthly before the switch, and monthly for 3 months after. PTH was measured at baseline and 3 months.

### Results:

Mean patient age was 61-years old, and 73% were males. The mean alfacalcidol dose administered was 1.39 ug three times a week. After 3 months, the PTH levels decreased from 55 to 51 pmol/L (P=0.38). Calcium and phosphate level were largely unchanged from baseline, with calcium levels from 2.448 to 2.440 mmol/L, and phosphate levels from 1.81 to 1.80 mmol/L.

Drug costs for IV alfacalcidol in our unit are around £0.259 per dose, compared to 0.158 for the oral equivalent, with further savings from nursing time and use of consumables. For our single small satellite unit we estimate approximately £4000 savings from drug and consumable costs.

### Discussion:

SHPT as a consequence of chronic kidney disease–mineral and bone disorder (CKD-MBD) is a common complication in long-term haemodialysis patients, and may manifest as abnormalities in bone biochemical markers, bone turnover and morphology, and vascular calcification. Chronic high levels of PTH are common in end-stage renal disease, which eventually leads to tertiary hyperparathyroidism without proper control 7. Currently, there is no consensus on the optimal regimens/routes of vitamin D use in dialysis patients, as small studies show conflicting results 1,2,3,4,5,6. In our local HD centre, IV pulsed alfacalcidol was used for patients with SHPT and compliance concerns. In October 2018 there was a stock shortage of IV alfacalcidol, and because of this, in centre pulsed oral alfacalcidol was offered three times a week in the same dose as per IV.

Our results showed that three months after switching, total serum calcium and phosphate levels remained unchanged, with a small, non-significant reduction of 4 pmol/L of PTH level (P=0.38).

Previous study by Mitwalli and Alam 6 showed similar results to ours, while work done by Lessard, et al 8 showed increased efficacy of pulsed oral alfacalcidol in the control of PTH, and the oral route was proved to be much more cost-effective 8.

**Conclusion:**

Our findings support the switch from IV to oral pulsed alfacalcidol for haemodialysis patients with SHPT, and also suggests useful cost savings.