The role of cinacalcet in peritoneal dwells: changes in PET

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INTRODUCTION:
Calcimimetics are used for the treatment of secondary hyperparathyroidism and have been shown to reduce PTH levels and to lower serum calcium concentrations in all forms of hyperparathyroidism. The peritoneum has an effective vascular surface area depending on pore number and it seems that there isn’t any calcimimetic receptor or calcium receptor directly on the peritoneal membrane. The effect of cinacalcet on peritoneal dialysis dwells and PET parameters is therefore largely unknown.

The aim of the study was to evaluate PET trends throughout treatment with cinacalcet.

METHODS:
- Retrospective study, 1 center
- 50 patients since 2008 in DP that had cinacalcet treatment;
- PET results before (1) and after (2) treatment (ultrafiltration, residual diuresis, Kt/V, dialysate-to-plasma ratio (D/P) creatinine, normalized protein catabolic rate (nPCR), BUN e albumine in the dialysate at 240 minutes, volume e proteinúria from 24h e seric PTH)

RESULTS:
- 17 had valid results having PET 1 e 2 data, time of treatment with cinacalcet ranged between 8 and 70 months;
- The patients’ average age was 53.9 years (±16.3) at the beginning of treatment;
- The majority of patients (96%) were under automated PD (APD) regimens with shorter dwell times;

Between the 2 PET timings, we found statistically significant decreases in Kt/V (median 2.5/week IQR [2.0; 3.3] vs 2.2/week [1.6; 2.6], Wilcoxon matched pairs p 0.026), in creatinine dialysate-to-plasma ratio (creatinine D/P) (1.01 [0.77; 1.44] vs 0.73 [0.44; 0.97], p 0.001), in normalized protein catabolic rate (nPCR) (1.0 g/Kg/day [0.8; 1.2] vs 0.8 g/Kg/day [0.6; 1.0], p 0.001), in PET dialysate protein loss (46 mg/dL [36; 65] vs 37 mg/dL [32; 59], p 0.008) and in dialysate BUN levels (51 mg/dL [40; 67] vs 41 mg/dL [30; 47], p 0.01). No differences were found on PET albumin and residual renal function. No significant correlation was found between the degree of the change in these parameters and cumulative dose of cinacalcet.

<table>
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<tr>
<th>PET 1</th>
<th>PET 2</th>
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<td>Kt/V</td>
<td>2.5/week</td>
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<td>IQR 2.0; 3.3</td>
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<tr>
<td>D/P creatinina</td>
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<td>Protein Loss in dialysate</td>
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<td>BUN dialysate</td>
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CONCLUSION:
Cinacalcet in end-stage renal disease patients seems to have no effect on vascular calcification and arterial stiffness but since the peritoneum is a form of vascular bed, it is submitted to the same vascular insults. As a calcimimetic it also interferes with smooth muscle calcium channels in rats.

In our study, patients undergoing PD that have been treated with cinacalcet have a gradual decrease in dialysis efficacy (Kt/V) but less dialysate protein loss although no significant changes on dialysate albumin. They also have a decrease in nPCR, dialysate BUN levels and creatinine D/P but further studies are needed.