

A) BRIEF PAPERS ON RESEARCH AND CLINICAL EXPERIMENTS

**Teriparatide in kidney transplant patients with severe hypoparathyroidism**

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**To the Editor:**

Teriparatide is a fragment of the natural human parathyroid hormone (PTH) consisting of the first 34 amino acids counting from the N-terminus end of the natural PTH. It is obtained by bioengineering in *Escherichia coli*. The peptide interacts with the PTH type 1 receptor, which is mainly located on osteoblasts and in renal tubules cells. Intermittent therapy with teriparatide increases the number of osteoblasts and subsequent bone formation, an effect that is mediated by the decrease in osteoblast apoptosis and an increased activation of osteoblasts and preosteoblasts, which is why it is used in the treatment of osteoporosis with a high risk of fracture.<sup>1,2</sup> Thus, it could also be observed that in renal transplant patients with hypoparathyroidism, where hypocalcaemia may worsen with the use of steroids, using synthetic PTH is a therapeutic option because it improves bone mineralisation, decreasing its resorption and the excretion of urinary calcium and increasing its intestinal absorption.<sup>3,4</sup>

Our aim is to assess subcutaneous teriparatide treatment in renal transplant patients with symptomatic post-operative hypoparathyroidism.

We report subcutaneous teriparatide treatment in doses of 20ug/day in three deceased-donor renal transplant patients with symptomatic post-operative hypoparathyroidism from January 2012. The following biochemical parameters were determined (at baseline, at 1, 3, 6 and 12 months post-treatment): ionic calcium (normal values [NV] 1-

1.30mmol/l), phosphataemia (NV 2.5-4.50mg/dl), magnesaemia (NV 1.70-2.40mg/day), alkaline phosphatase (NV up to 120-270mIU/l), 24-hour urinary calcium (NV 60-200mg/day), uric acid (NV 3.3-7mg/dl and 2.2-5.7mg/dl in women), cholesterol (NV 150-200mg/dl), iPTH (intact PTH) (NV 35-72pg/ml), 25-hydroxyvitamin D (25OHD) (NV>40ng/ml) and creatinine (0.8-1.2mg/dl).

After transplantation, all patients received immediate induction with thymoglobulin, while subsequent maintenance immunosuppression varied: 2 with calcineurin inhibitors and 1 with sirolimus associated with mycophenolate and deltasone. Patients also received ergocalciferol (according to levels), calcium and calcitriol in high doses.

**RESULTS**

Three patients with renal transplant from a cadaveric donor (one patient, second transplant) 2 males, (mean) age 42.6±6.02 years, aetiology of chronic renal failure: obstructive uropathy, unknown, systemic erythematosus lupus. (Mean) time on haemodialysis 101.3±121.7 months, time to transplantation 6±3.46 years, surgical parathyroidectomy (PTX) one patient prior to transplantation, two patients in the fourth year after transplantation, all due to severe secondary hyperparathyroidism. In the PTX immediate postoperative period, two patients had seizures due to hypocalcaemia, in one there was a fall from standing height and fracture of the scapula and clavicle. Patients persisted in their progression with hypoparathyroidism (PTH <5ng/ml) with symptomatic hypocalcaemia that was difficult to correct. Requirement for high doses of calcium and calcitriol orally and intravenously and ergocalciferol orally (maintaining 25OHD values at 40ng/ml).

Treatment began with synthetic PTH in January 2012 due to symptomatic hypoparathyroidism and difficulty in taking the medication (calcium and calcitriol in high doses).

Once teriparatide was administered to patients, the requirement for calcium and calcitriol was minimal, and they were subsequently discontinued (30 days).

The biochemical parameters are shown in Table 1.

As regards adverse events: at the beginning of the treatment, only one patient had nausea, mild hypotension and numbness in legs, the latter being due to hypomagnesaemia.

One patient, at the ninth month of treatment, reported an episode of shivering and tachycardia, in addition to dyspnoea during the administration of the following day. The patient sought consultation due to this event and it was decided to discontinue the medication. He did not have symptoms in the following days.

According to what has been described in literature, antibodies have been detected that had crossed reactivity with teriparatide in 2.8% of the women treated with the aforementioned drug, generally after 12 months of treatment, with symptoms clearing after the discontinuation of the latter.

We did not observe abnormalities in the values of 24-hour urine calcium and creatinine, but there was a slight increase in uric acid, cholesterol and alkaline phosphatase (PTH effect).

**CONCLUSION**

Synthetic PTH in intermittent treatment is a therapeutic option for patients with hypoparathyroidism. It improves symptoms, corrects calcaemia values

**Table 1.** Biochemical data prior to parathyroidectomy and during teriparatide therapy

Data Prior to Parathyroidectomy										
	Ica (mmol/l)	P (mg/dl)	Mg (mg/dl)	AP (mUI/l)	25OHD (ng/ml)	iPTH (pg/ml)	Uric acid (mg/dl)	Col (mg/dl)		
Mean	1.3	4.9	2.2	860	31	1540	5.5	180		
Teriparatide Therapy										
	Ica (mmol/l)	P (mg/dl)	Mg (mg/dl)	Cau (mg/day)	AP (mUI/l)	25OHD (ng/ml)	iPTH (pg/ml)	Creat (mg/d)	Uric acid	Col (mg/dl)
Baseline	0.81	3.6	1.9	201	264	48	2	1.5	5.7	181
Month 1	0.97	3.27	1.75				3			
Month 3	1.08	4.4	1.53	157			3	1.4	5.8	188
Month 6	1.03	3.6	1.58		409	40	2			
Month 12	1.11	3.6	1.55	127	260	40	2	1.6	6	235

25OHD: 25 hydroxyvitamin D; Ica: ionic calcium; Col: cholesterol; Creat: creatinine; AP: alkaline phosphatase; Mg: magnesium; P: phosphorus; iPTH: intact parathyroid hormone.

and reduces requirements for calcium and calcitriol, and in short, helps to improve the quality of life that we must offer our transplant patients.

### Conflicts of interest

The authors declare that they have no conflicts of interest related to the contents of this article.

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## Evaluation of advanced kidney failure consultation in the Hospital de Cabueñes

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### To the Editor:

There is a general consensus about the importance of a personalised follow-up in consultations of patients with advanced renal failure and it has been recognised for years as a good prognosis factor in the progression of these patients.<sup>1,2</sup> We summarise our experience, evaluating some of the normal parameters in our study group. Currently, the preparation of a patient who is close to beginning renal re-

placement therapy is a fundamental tool. Our objective is to share our experience in this regard and to compare the results of the most common clinical and biological parameters, according to age groups and the modified Charlson index.<sup>3</sup>

The group reviewed corresponds to 98 patients assessed for this type of consultation in 2012. We assessed the overall distribution by age, sex, type of nephropathy, previous preparation for renal replacement therapy (vaccination, their response, vascular access, etc.) and standard biological markers. We then compared the aforementioned parameters according to age group and the Charlson index. The mean age of the group was 67.35 and the median was 69, with a majority of males (2/3). The median of the modified Charlson index was 6 and the mean, 6.5. The types of nephropathy were grouped by order of frequency into nephroangiosclerosis, diabetic nephropathy, unknown origin, glomerulonephritis, polycystic kidney disease, obstructive uropathy and others, as expected. The hepatitis B vaccination was administered in 86% of the patients and the rest was distributed amongst those who had prior natural immunity and those in whom there was no time to initiate the process for one reason or another. We found 5% of non-respondents and 56% of respondents, with a high percentage of patients in the titration phase or who did not finish the required dose. Vascular mapping was required for arteriovenous fistulas and, if not possible, we scheduled the insertion of permanent catheters, which was carried out by nephrologists in our unit.

The observation of biological parameters (Table 1) was performed by reviewing the group's overall data divided into groups by age and the Charlson index. It was notable that very similar results were observed by comparing the results of both medians with the total population, which displayed better nutritional parameters and lower erythropoietin requirements in the theo-