# SEASONAL PROFILE OF i-PTH IN CHRONIC HEMODIALYSIS PATIENTS: ANALYSIS OF THE SPANISH NEPHROCARE CLINICS.

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## INTRODUCTION

The secondary hyperparathyroidism associated with the CKD is a frequent complication which is modulated by several factors. Nowadays, to our knowledge, the plausible existence of seasonal variations in the i-PTH levels in chronic hemodialysis patients in Spain, a conventional sunny country, has not been evaluated.

## PATIENTS AND METHODS

All patients on chronic hemodialysis in any of the NephroCare Spanish facilities which had at least 2 i-PTH measurements between July 2011 and March 2015 were screened for their inclusion in this study. During this observational period serum levels of calcium and phosphorus were also recorded. On the other hand, the monthly sunshine hours average number, available from the Spanish Meteorological Agency, was used as seasonal calibrator. The quarterly results were expressed as means ± SD and were compared using the ANOVA test plus the post-hoc Scheffé analysis. Further exponential smoothing models were used to study the i-PTH seasonal profile, adjusting this parameter as a simple seasonal model.

## RESULTS

8670 patients treated in 64 Spanish FMC facilities were analyzed. A total of 14.42 ± 10.11 determinations of i-PTH per patient were examined. The i-PTH showed the higher levels during the winter and the minimum during the summer (Table 1).The observed profile of i-PTH fits the profile estimated by exponential smoothing models with high accuracy ($R^2$=0.72) (figure 1). This seasonal variation in the i-PTH levels was associated with statistically significant changes in the serum levels of calcium and phosphorus.

| | Winter | Spring | Summer | Autumn | P |
|---|---|---|---|---|---|
| PTH-i (ng/mL) | 361,4 ± 322,4 | 347,5 ± 308,2 [a] | 326,7 ± 305,2 [a,b] | 330,6 ± 305,3 [a,b] | <0,001 |
| Calcium (mg/dL) | 8,94 ± 0,63 | 8,95 ± 0,62 | 8,96 ± 0,62 | 9,00 ± 0,65[a,b,c] | <0,001 |
| Phosphorus (mg/dL) | 4,28 ± 1,28 | 4,28 ± 1,27 | 4,27 ± 1,29 | 4,30 ± 1,30[a,b,c] | 0,001 |
| Sunshine hours | 144,7 ± 33,8 | 234,0 ± 39,4 [a] | 299,5 ± 50,5 [a,b] | 187,1 ± 45,4 [a,b,c] | <0,001 |

[a] p<0,05 vs Winter; [b] p<0,05 vs Spring; [c] p<0,05 vs Summer.

## CONCLUSIONS

- **The i-PTH levels in chronic hemodialysis patients in Spain showed a seasonal profile.**
- **The statistically significant variation of serum calcium and phosphorus has low clinical relevance.**
- **Further studies are required to characterize the potential role of 25 hydroxi vitamin D over the i-PTH seasonal profile.**
- **This seasonal profile should be considered in order to improve balance the efficacy and side effects/cost of anti-parathyroid drugs.**

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