

## Parathyroidectomy in chronic kidney disease patients: is it time for changes?

Paratireoidectomia na doença renal crônica: é hora de mudar?

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Secondary hyperparathyroidism (SHPT) is a disorder commonly seen in patients with chronic kidney disease. Patients diagnosed with SHPT can experience a decreased quality of life, bone fractures, cardiovascular disease and mortality.

At present, nephrologists are treating the disease by targeting the parathyroid glands either directly or indirectly using phosphate binders (with or without calcium), vitamin D receptor activators and calcimimetics.<sup>1</sup> However, in a number of uremic patients, the disease evolves to the extent that it becomes unresponsive to clinical treatments and therefore surgical intervention (parathyroidectomy) is necessary.

In Brazil, the chances of a patient requiring surgery is increased not only because of an inadequate preventative health policy aimed at chronic kidney disease but also because of a limited access to appropriate medications and inaccessible new health technologies. Indeed, a recent survey conducted by the Department of Chronic Kidney Disease - Mineral Metabolism Disorder of the Brazilian Society of Nephrology reported that around 11% of chronic dialysis patients have severe SHPT, showing parathormone levels above 1000 pg/mL<sup>2</sup> - all, most certainly, waiting for parathyroidectomy.

Seeing that parathyroidectomy is currently an unavoidable solution in many of these cases, we must consider some important questions, namely, what is the preferred type of parathyroidectomy? Subtotal, total or total with parathyroid tissue autotransplantation? And, is autotransplantation effective in avoiding post-surgical hypoparathyroidism?

In a recent study published in the Brazilian Journal of Nephrology, Vieira *et al.*<sup>3</sup> investigated these questions in a group of chronic kidney disease patients (renal transplant, peritoneal and hemodialysis patients) who had undergone parathyroidectomy with autotransplantation. The patients received a bicarbonate infusion to raise the serum pH, inducing mild hypocalcemia; though the effect was only temporary immediately after the infusion with parathyroid hormone levels failing to rise in the patient group. The control group, on the other hand did rise, suggesting a blunted response of the implanted parathyroid tissue to decrease calcemia. One explanation given by the authors was the possible absence of autonomic reinnervation of the graft due to the relatively short period between the study and the surgery (median time of 8, 9 months). Though the number of implanted fragments of parathyroid tissue did not seem to be a major determinant of graft's hypofunction, the uremic milieu *per se*, regardless of the type of renal replacement therapy, was hypothesized as possibly influencing the graft function and survival. Contrary to the authors' findings, other study, which evaluated patients who underwent total parathyroidectomy with heterotopic autotransplantation of normal parathyroid tissue, reported better results for graft function.<sup>4</sup> Though, there are multiple reasons why graft hypofunctioning may occur in uremic patients which are not yet fully understood.

The authors suggest that subtotal parathyroidectomy should be revised in uremic patients. Although this approach

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may avoid post-surgical hypoparathyroidism, it has also been associated with increased risk of both persistent and recurrent hyperparathyroidism, which, in the past required a new surgery. Whether these complications will be more easily controlled by current clinical strategies remains to be demonstrated by prospective studies.

While the debate continues to discover which surgical approach is best to treat severe SHPT, it has been demonstrated that parathyroidectomy improves survival in dialysis patients.<sup>5</sup> Therefore, clinicians are recommended to bear in mind that (i) parathyroidectomy should continue to be performed whenever indicated and, (ii) that operating later is better than not operating at all.

In conclusion, as nephrologists, the best strategies forward are to increase our knowledge of the disease progression as early as possible and continuous patient follow up. As such, we can achieve better control of the mineral metabolism disorder along the different stages of chronic kidney disease. After

all, our aim should not only be to discuss with our patients the best surgical approach, but ultimately to try and prevent parathyroidectomy.

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