

Intraoperative Monitoring of Parathormone in the Surgical Treatment of Renal Hyperparathyroidism

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Abstract

Introduction: Intraoperative monitoring of parathyroid hormone can confirm the complete excision of hyperfunctional parathyroid tissue, as the plasma half-life of PTH is approximately 5 minutes.

Material and Method: The purpose of this study was to analyse the values of parathormon (PTH) and the intraoperative impact in patients with secondary hyperparathyroidism of renal cause (sHPT). A series of 86 patients who were hospitalised in our clinic between February 2015 to December 2018, were included in the study. All patients underwent surgery with PTH monitoring. PTH was determined preoperatively, intraoperatively 15 minutes after parathyroidectomy and postoperatively.

Results: Out of a total of 86 patients, 6 patients had non-functional renal transplant. 81 patients were operated on per primam and 5 patients were operated for disease recurrence. There were 77 total parathyroidectomies and 4 subtotal parathyroidectomies. One patient had 5 parathyroid glands. There were 4 patients with recurrent hyper-plastic tissue excision. Blood samples were collected intraoperatively through the puncture of the jugular vein. The PTH value was determined by the Elecsys PTH STAT® test. The mean value of preoperative PTH was 1658 pg / mL and decreased to 46.5 pg / mL at the end of the operation. Subsequently, the level of PTH harvested at 3-6 months increased slightly to 59.8 pg / mL. 80 (93%) of patients had elevated preoperative calcium values. Recurrent hyperparathyroidism was found in 1 of the 4 patients who underwent subtotal parathyroidectomy.

Conclusions: PTH value is influenced by the intraoperative manipulation of the parathyroid glands, the individual variability of PTH half-life and the physiological state of the patient. The decrease of PTH measured intraoperatively at 15 minutes after harvest with at least 90% of the preoperative value indicates the success of a total parathyroidectomy, with normalisation of calcium and PTH.

Key words: secondary hyperparathyroidism, chronic kidney disease, parathyroidectomy, parathyroid hormone, intraoperative PTH