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Calcium-Dependent Release of N-Terminal Fragments and Intact Immunoreactive Parathyroid Hormone by Human Pathological Parathyroid Tissue *in vitro*[*]

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The regulation of PTH secretion by extracellular calcium was studied in parathyroid tissue obtained from patients with hyperparathyroidism (adenoma or hyperplasia) using both an amino (N)-terminal RIA as well as an immunoradiometric assay (intact assay) specific for the intact hormone. The parathyroid glands separated into three major groups when examined in terms of absolute amounts of PTH secreted, degree of suppressibility, and set-point for calcium (the concentration of calcium causing half-maximal inhibition of PTH release). In cell preparations from group A (two different adenomas, two hyperplastic glands from a patient with renal failure, and a hyperplastic gland from a patient with hypophosphatemic rickets), both assays showed comparable PTH release (agreeing within 2-fold), similar degrees of suppressibility and similar, if not identical, set-points. In group B (two adenomas and one hyperplastic gland from a patient with renal failure), PTH secretion, as measured in the N-terminal assay, was 3- to 6-fold more than that measured in the intact assay. The set-points and maximal degrees of suppressibility were, however, still comparable. In group C [two adenomas and one gland from a patient with hypophosphatemic rickets (the sister of the patient in group A)], no suppressibility was observed when PTH release was measured using the intact assay (*i.e.* < 50% suppression of PTH release at 2–3 mM Ca^{2+}). In one of these three glands, the Nterminal assay was used in addition to the intact assay, and no suppressibility was present with either assay. Thus, in general, the effects of extracellular Ca^{2+} on PTH secretion from pathological parathyroid tissue were similar when assessed with both an N-terminal and an intact assay, at least with respect to setpoint and maximal suppressibility. In a few cases, maximal PTH release was greater when measured with the

N-terminal assay, consistent with substantial release of N-terminal fragments in addition to intact PTH. In addition, nonsuppressible glands were not uncommon when PTH release was measured by the intact assay, confirming previous studies with less specific assays. (*J Clin Endocrinol Metab* **69**: 860, 1989)

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