with subacute thyroiditis, 8 with thyroid adenoma, 13 with thyroid cancer involving 11 cases with medullary thyroid cancer and 2 with adenocarcinoma, and 6 with hypothyroidism.

Reactivity of calcitonin secreting cell was expressed by the index of \( \Delta \text{CT/} \Delta \text{Ca} \) in which \( \Delta \text{CT} \) and \( \Delta \text{Ca} \) represented the increments of plasma calcitonin and calcium levels after the calcium infusion.

Basal plasma calcitonin levels were strikingly high in medullary thyroid cancer, while within normal limits in a majority cases with other thyroid diseases.

\( \Delta \text{CT/} \Delta \text{Ca} \) values were significantly higher in patients with Graves' disease than in those with other thyroid diseases except medullary thyroid cancer having the highest values of all.

A significant correlation was seen between \( \Delta \text{CT/} \Delta \text{Ca} \) values and serum thyroxin levels \( (r=0.86) \) in patients with thyroid diseases except those with medullary thyroid cancer and those placed on thyroxine medication. All hypothyroid patients showed low \( \Delta \text{CT/} \Delta \text{Ca} \) values regardless of the causes of hypothyroidism whether due to \( ^{131} \text{I} \) treatment, surgery or chronic thyroiditis.

It was suggested that hyperactivity of C-cell prevailed in hyperthyroidism, while C-cell function was decreased or extinct in hypothyroidism.

The Clinical Studies of Plasma Parathyroid Hormone and Calcitonin Measured by Radioimmunoassay

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Plasma calcitonin and parathyroid hormone (PTH) concentrations were determined by radioimmunoassay in various disorders with an abnormal calcium metabolism.

(1) In 79% of the patients with chronic renal failure, both basal plasma calcitonin and PTH levels were increased. Furthermore, plasma calcitonin levels after a single hemodialysis found to be reduced in spite of elevated calcium concentration. After a 6 months period of hemodialysis, basal calcitonin levels were decreased to less than 0.5 ng/ml in all cases. Plasma calcitonin levels were not significantly correlated to serum phosphorus and calcium concentration. These results suggest the presence of circulating immunoreactive fragments of calcitonin in chronic renal failure.

(2) It is useful in differential diagnosis of hypercalcemia to measure plasma calcitonin and PTH level. Primary hyperparathyroidism showed high PTH with normal calcitonin level, malignant tumor with bone metastasis showed high calcitonin with low PTH level and PTH producing tumor showed high values for both calcitonin and PTH level.

(3) Plasma PTH level in breast cancer with bone metastasis was increased strikingly high in response to hypocalcemia induced by EDTA infusion.