BASIC AND CLINICAL EVALUATION FOR PTH RADIOIMMUNOASSAY KIT EIKEN

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Radioimmunoassay of parathyroid hormone(PTH) is thought to be one of the most difficult assays because of the heterogeneity of PTH and the lower sensitivity of the method. Recently, a sensitive and high specific radioimmunoassay procedure for PTH was developed. We checked the PTH kit (EIKEN) bacically, and determined serum PTH levels in normal subjects and various parathyroid diseases. The results were as follows.

(1) Standard curve showed dose-responded from 0.1 to 20.0ng/ml.

(2) The cross-reactivities to other peptides, ACTH, LH, FSH,GH, CT, PTH N1-34, TSH and ADH were not observed.

(3) The dilution curves of serum PTH of primary hyperparathyroidism and chronic renal failure were paralell to this standard curve.

(4) The coefficients of variation for intraassay were 4.17% and for interassay were 9.0%. Correlation between this assay and our own method revealed good, r=0.86 (n=100).

(5) The concentrations of serum PTH were as follows: normal subjects, 0.43±0.66(M±S.D.) ng/ml (n=20), patients with primary hyperparathyroidism, 4.75±2.18ng/ml(n=13); chronic renal failure, 4.43±0.21 ng/ml(n=35); hypercalcemia, 0.54±0.74ng/ml(n=5); idiopathic hypoparathyroidism, 0.15±0.22ng/ml (n=16); pseudo-hypoparathyroidism, 0.83±0.91ng/ml (n=3); osteomalacia, 0.75±0.87ng/ml(n=18).

(6) Serum PTH levels in the most of the patients with primary hyperparathyroidism were not suppressed during Ca infusion for 4 hours.

A RADIOIMMUNOASSAY FOR PARATHYROID HORMONE BY THE USE OF BOVINE 1-34 PTH ANTIBODY

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A sensitive and specific radioimmunoassay for parathyroid hormone(PTH) was deviced by the use of rabbit antiserum to synthetic bovine 1-34 PTH(Beckman).

The PTH antibody prepared by immunization with the synthetic bovine 1-34 PTH, conjugated with gultaraldehyde to BSA, showed a high titer of about 1:20,000.

A preparation of synthetic bovine 1-34 PTH was radioiodinated by the modified method of Hunter & Greenwood, that is, chroramine T procedure described in this report.

^{125}I-bPTH was purified by means of adsorption on Quso G-32 powder(Sigma).

Antibody-bound ^{125}I-bPTH(B) and antibody free ^{125}I-bPTH(F) were separated by adsorption on dextran-coated charcoal (D-C-C).

The minimal detectable quantity of PTH by this assay system was 100 pg/ml in plasma.

Synthetic h.ACTH,h.calcitonin,h.GH,TSH,somatostatin,LH-RH,glucagon,insulin,neurotensin and FSH showed not significant cross reaction in the range of 100 pg/ml-10 ng/ml.

PTH concentrations in the plasma of healthy subjects were not detectable-290 pg/ml.

PTH concentrations in the plasma of patients with primary hyperparathyroidism were 190-510 pg/ml (342.0 ± 90.6 pg/ml, M ± SD).

PTH concentrations in the plasma of patients with renal insufficiency were 100-340 pg/ml.

The values for the patients with primary hyperparathyroidism overlapped with those for the healthy subjects.