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RADIOLIGAND BINDING STUDIES OF RENAL DOPAMINERGIC RECEPTORS BY THE USE OF H-3-SPIPERONE.

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In order to clarify the existence of dopaminergic receptors in renal plasma membrane and the effect of sodium load on these receptors, radioligand binding studies using H-3-spiperone were performed. Renal cortex and medulla dissected from rat kidneys perfused with 0.85 % NaCl were homogenized in 4 volumes of 200 mM sucrose, 30 mM d,l-histidine, 5 mM EDTA-2Na, 18 mM tris buffer, pH 7.4 with Potter-Elvehjem homogenizer. The homogenates were centrifuged at 10,000 g for 30 min, and then the supernatants were recentrifuged at 48,000 g for 60 min. Next the sediments were resuspended with 50 mM tris buffer containing 10 mM $MgCl_2$. Plasma membranes prepared in this way were incubated with H-3-spiperone at 37°C for 15 min, and the binding fraction were separated with Whatman GF/C glass fiber fliters. Maximal binding capacity (Bmax) of dopaminergic receptor was 540 ± 41 fmol/mg protein in cortex and 373 ± 30 fmol/mg protein in medulla, respectively. Dissociation constant (Kd) was 7.2 ± 0.4 nM in cortex and 8.2 ± 2.2 nM in medulla, respectively. Kd in both cortex and medulla increased after sodium load, but the increment of Bmax in cortex and medulla was not significant. Conclusion: Dopaminergic receptor exists in renal plasma membrane.

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COMPARATIVE STUDY OF ADRENAL SCINTIGRAPHY AND COMPUTED TOMOGRAPHY IN CUSHING'S SYNDROME, PRIMARY ALDOSTERONISM AND PHEOCHROMOCYTOMA.

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We made a comparative study between adrenal scintigraphy and CT in the diagnosis of functioning adrenal lesions. Materials included 10 cases of Cushing's syndrome (six with adenoma, and four with hyperplasia), 8 cases of primary aldosteronism (all with adenoma) and 5 cases of pheochromocytoma.

Adrenal adenomas causing Cushing's syndrome were all detected by both scintigram and CT. Adrenal hyperplasia causing Cushing's syndrome showed normal adrenal gland on CT, and bilateral high activity on scintigram. CT identified all of eight cases of primary aldosteronomas, but scintigraphy failed to identify two aldosteronomas. CT and venous sampling were useful in detection of aldosteronomas.

Five pheochromocytomas (4 adrenal and one extraadrenal were all detected by both CT and scintigraphy using I-131-MIBG (metaiodobenzylguanidine). The latter was particularly useful in detecting extraadrenal pheochromocytoma.

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SCINTIGRAPHY OF PHEOCHROMOCYTOMA USING I-131 METAIODOBENZYLGUANIDINE (I-131 MIBG).

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The purpose of this study is to analyse the results of scintigraphy of I-131 MIBG which were carried out at various place. Total number of the patients, in whom scintigraphy of I-131 MIBG was performed up to Sept. 1984, was 143. Forty three out of 143 patient were diagnosed pheochromocytoma on the basis of increased catecholamine in serum and urine and abnormal mass on CT or histological finding of mass. The accumulation of I-131 MIBG by pheochromocytoma were observed in 40 out of 43 patients with pheochromocytoma. Five out of 143 patients were neuroblastoma and all of them showed the clear accumulation of I-131 MIBG by neuroblastoma on the scintigrams. Eight out of 143 patients were medullary carcinoma and 5 of them showed the clear accumulation of I-131 MIBG on the scintigrams.

These results indicates that the scintigraphy of I-131 MIBG is excellent imaging of pheochromocytoma as well as of neuroblastoma and medullary carcinoma.

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CLINICAL STUDIES OF META-(I-131)-IODO-BENZYLGUANIDINE SCANS IN PHEOCHROMOCYTOMAS AND THYROID MEDULLARY CANCERS.

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I-131 MIBG scans have been recently reported to be useful in diagnosis of pheochromocytomas. We have performed I-131 MIBG scans in 9 patients with pheochromocytomas in whom 3 cases were associated with thyroid medullary cancers (Sipple's syndrome). Seven cases were adrenal type and 2 cases were extra-adrenal type. The size of pheochromocytomas,which were measured by surgery, were ranged from 1.5cm to 10cm in diameter.

I-131 MIBG scans revealed all pheochromocytomas (sensitivity:100%),including two ectopic type. One of which was not found by X-CT or angiography, but demonstrated at para-urinary bladder by I-131 MIBG scan

Thyroid medullary cancers,in which 3 cases were associated with pheochromocytoma and one was sporadic type,were also imaged by I-131 MIBG. The uptake was also seen with normal catecholamine levels, which indicated that mechanism of uptake in the thyroid medullary cancer was independent of catecholamine levels.

In summary; I-131 MIBG scans were useful not only in pheochromocytomas but also in thyroid medullary cancers with elevated or normal catecholamine levels.