

RECTAL POTENTIAL DIFFERENCE IN ESSENTIAL HYPERTENSION

SIR,—It has been suggested repeatedly in your columns¹⁻⁵ that the measurement of rectal potential difference (P.D.) might offer a screening test for primary hyperaldosteronism. This suggestion is based on the fact that rectal P.D. is raised in primary hyperaldosteronism compared with healthy controls. But what matters is whether the groups of hypertensive patients with and without evidence of mineralocorticoid excess differ in respect of rectal P.D. Despite a few single observations,⁶ this has not been investigated systematically.

We have measured the rectal P.D. and plasma-aldosterone in 24 healthy controls, 22 patients with proven primary or secondary hyperaldosteronism, and 80 patients with essential hypertension. The patients with essential hypertension were classified according to plasma-renin-activity, as related to fasting urinary sodium/creatinine ratio,⁷ into low, normal, and high renin hypertensives. Rectal P.D. was measured by the method of Edmonds and Richards,¹ plasma-aldosterone by a modification of the method of Ito et al.,⁸ and plasma-renin-activity by

the method of Boyd et al.⁹ The measurements were performed under basal conditions,⁷ and all antihypertensive drugs were stopped at least 2 weeks before investigation, none of the patients had received spironolactone or oral-contraceptive drugs, and 40% of the patients had never received any antihypertensive medication. The accompanying figure shows the rectal P.D. and plasma-aldosterone levels in normal subjects and patients. The rectal P.D. in normal subjects was 26 ± 5 mV (mean \pm s.d.) which accords closely with the values obtained by Edmonds and Richards.¹ 18 out of 22 patients with primary or secondary hyperaldosteronism (82%) had a raised rectal P.D.; but so did 20% of patients with essential hypertension all with normal plasma-aldosterone concentrations. (The high proportion of low-renin hypertensives reflects only our special interest in these patients.) Plasma-aldosterone correlated positively with rectal P.D. for controls and patients with hyperaldosteronism combined ($r=0.84$, $P<0.005$) but not for patients with essential hypertension and normal plasma-renin-activity ($r=-0.09$). In fact, a weak but significant negative correlation between plasma-aldosterone and rectal P.D. was found in low-renin hypertension ($r=-0.52$, $P<0.05$). rectal P.D. being highest in 3 patients with consistently suppressed plasma-aldosterone. This, and the higher incidence of raised rectal P.D. (30 vs. 10% in normal-renin hypertensives) provides some indirect evidence for other mineralocorticoid excess in a small percentage of low-renin hypertensives.

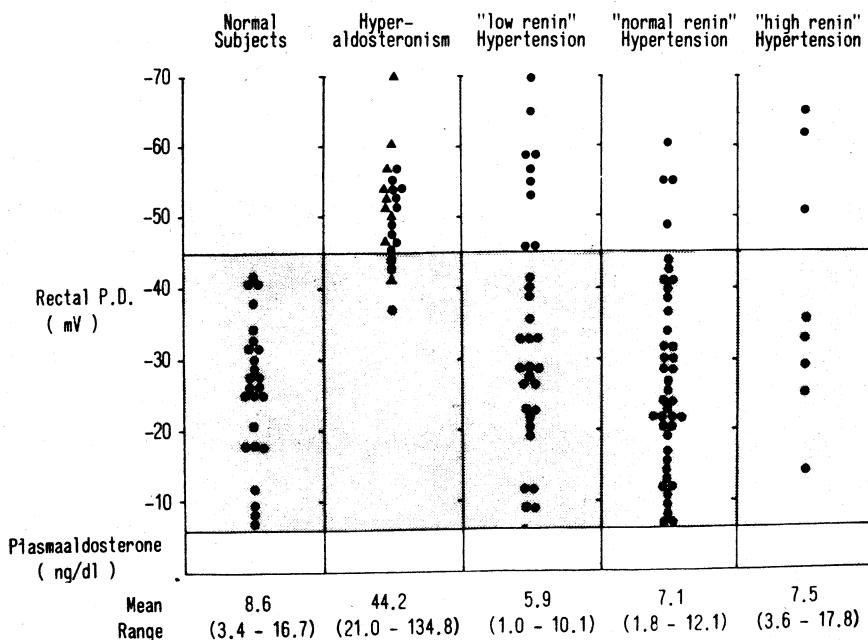
Thus measurement of rectal P.D. alone seems to be of limited value as screening test for mineralocorticoid excess in hypertensive patients, since it is increased in a considerable percentage of all subgroups of essential hypertension. Combined with renin measurements it may select most patients with primary hyperaldosteronism and also the 30% of low-renin hypertensives to which the efforts to detect other mineralocorticoid excess should be directed.

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Rectal P.D. and plasma-aldosterone in normal subjects, patients with primary (▲) and secondary (●) hyperaldosteronism and in patients with essential hypertension.

The shaded area corresponds to the 95% confidence limits for normal subjects.