Comment (to T. Kubota and T. Aso)

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It has been speculated that an intrapituitary renin-angiotensin system may have a local physiological function in regulating pituitary hormone release. Immuno-histochemical studies of rat pituitary have demonstrated the presence of renin in gonadotroph cells, but not in lactotrophs, and angiotensin-II (AngII)-specific high-affinity receptors have been located on lactotrophs. Furthermore, superfusion of rat anterior pituitary cell aggregates with 10-min pulses of 0.1–10 nM AngII resulted in a prompt and concentration-dependent rise in PRL release, and the effect could be blocked by saralasin, an AngII receptor agonist.

Also, renin, angiotensinogen and angiotensinogen-converting enzyme were located by immunohistochemical methods in human pituitary lactotrophs. Furthermore, AngII promotes PRL release and this PRL production is inhibited by saralasin in monolayer cultures of human anterior pituitary cells. Taken together, previous reports and present data may suggest the existence of a paracrine control of PRL production in rats and an auto-crine regulation in man by a local renin-angiotensin system. However, the results of previous studies performed in vitro is not consistent with the results in vivo. In the rat, intraventricular AngII injection depresses PRL concentrations within 15 min of drug administration even though an intravenous injection of AngII produces a rise in PRL levels within 5 min. In humans, Denolle et al. [1] have reported that the circulating renin-angiotensin system does not interact with diurnal PRL release or with the response to TRH (tables 1,2).

Table 1. Relationship between active renin and PRL concentrations

Hypertensive patients, n Serum PR levels, ng/ml

Normal renin 16 4.7 ± 0.9

High renin 20 6.6 ± 0.8

Table 2. Effect of chronic converting enzyme blockade (enalapril, 20 mg/day, 40 ± 10 days)

Patient Serum PRL levels after

TRH stimulation, ng/ml

before after

Placebo 5.2 ± 2.3 36.6 ± 4.2

Chronic converting enzyme blockade 4.7 ± 0.8 31.3 ± 3.8

Reference

1 Denolle T, Rohmer V, Saint-Andre JP, Gyuene TT, Galland F, Bigorgne JC, Schambelan M, Corvol P: Effect of the circulating renin-angiotensin system on prolactin release in humans. J Clin Endocrinol Metab 1990;70:288–292.