INCREASED TRH CONTENT OF THE BASAL GANGLIA IN HUNTINGTON'S DISEASE

To the Editor: Our recent observation that the amount of thyrotropin-releasing hormone (TRH) contained in the rat striatum can be markedly affected by drugs and lesions (Spindel ER, Pettibone DJ, Wurtman RJ. Unpublished data) prompted us to measure TRH post mortem in basal ganglia of brains of patients dying of Huntington's disease. TRH was assayed with the method previously described for rat striatum.[1] (The stability of brain TRH post mortem has previously been established by Okon and Koch.[2]) We observed that TRH levels were elevated nearly threefold over those seen in caudates and putamens from control subjects (Table 1). Hippocampal TRH levels were unaffected.

The increase in TRH may reflect changes in TRH turnover in the basal ganglia or may simply reflect a relative sparing of TRH neurons in the highly atrophied basal ganglia present in Huntington's disease.[3] The increase seen in basal-ganglia TRH in patients with this disease resembles the threefold increase previously noted in striata of rats subjected to partial striatal deafferentiation (by cerebral hemitransection at midhypothalamic level) (Spindel ER, Pettibone DJ, Wurtman RJ. Unpublished data.) To our knowledge, TRH is the first putative peptide neurotransmitter to be shown to be markedly increased in the basal ganglia in Huntington's disease. This finding emphasizes the potential importance of extrahypothalamic TRH as a brain neurotransmitter.

Table 1. Levels of Thyrotropin-Releasing Hormone in Brain Regions from Patients with Huntington's Disease and Control Subjects.

GROUP	THYROTROPIN-RELEASING HORMONE *		
	CAUDATE	PUTAMEN	HIPPOCAMPUS
	pg/mg of tissue		
Control subjects	1.0±0.1 (18)	0.9±0.1 (21)	0.7±0.2 (6)
Patients	2.7±0.4 (21) †	2.6±0.3 (23) †	0.7±0.1 (5)

*Values are expressed as mean ±S.E.M. Figures in parentheses denote number of samples analyzed.

†$P<0.01$ by a posteriori comparisons according to the method of Scheffé, after two-way analysis of variance.

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