

EFFECTS OF ELECTRICAL STIMULATION OF THE STRIATUM ON THE MICTURITIONAL REFLEX IN CATS

Hypothesis / aims of study

In Parkinson's disease in which basal ganglia is affected, micturitional disturbance is common¹). Recent studies reported that neural circuitry of basal ganglia would have an inhibitory effect on micturitional reflex^{2),3)}. Then we examined the role of the striatum on the micturitional reflex in cats by electrical stimulation.

Study design, materials and methods

Experiments were done on 12 adult male cats under anesthesia with ketamine. We stereotaxically inserted microelectrode into the striatum and applied electrical stimulation (100 Hz, 100-200 μ A) to examine the effects of striatum on the micturitional reflex.

Results

Electrical stimulation of the head of inferior medial caudate and a part of putamen elicited the inhibitory effects on the micturitional reflex (Figure 1). None of the responses were facilitatory.

Interpretation of results and concluding message

The striatum would have an inhibitory effect on the micturitional reflex, and there seems to be a locality for eliciting this effect.

References

- 1) Autonomic disorder in Parkinson's disease. *J Neural Transm (Suppl)* 1995;45: 11-19
- 2) Effects of apomorphine and L-dopa on the parkinsonian bladder. *Neurourol Urodyn.* 1993; 12: 203-209.
- 3) Dopaminergic mechanisms underlying bladder hyperactivity in rats with a unilateral 6-hydroxydopamine (6-OHDA) lesion of the nigrostriatal pathway. *Br J Pharmacol.* 2003; 139: 1425-1432.

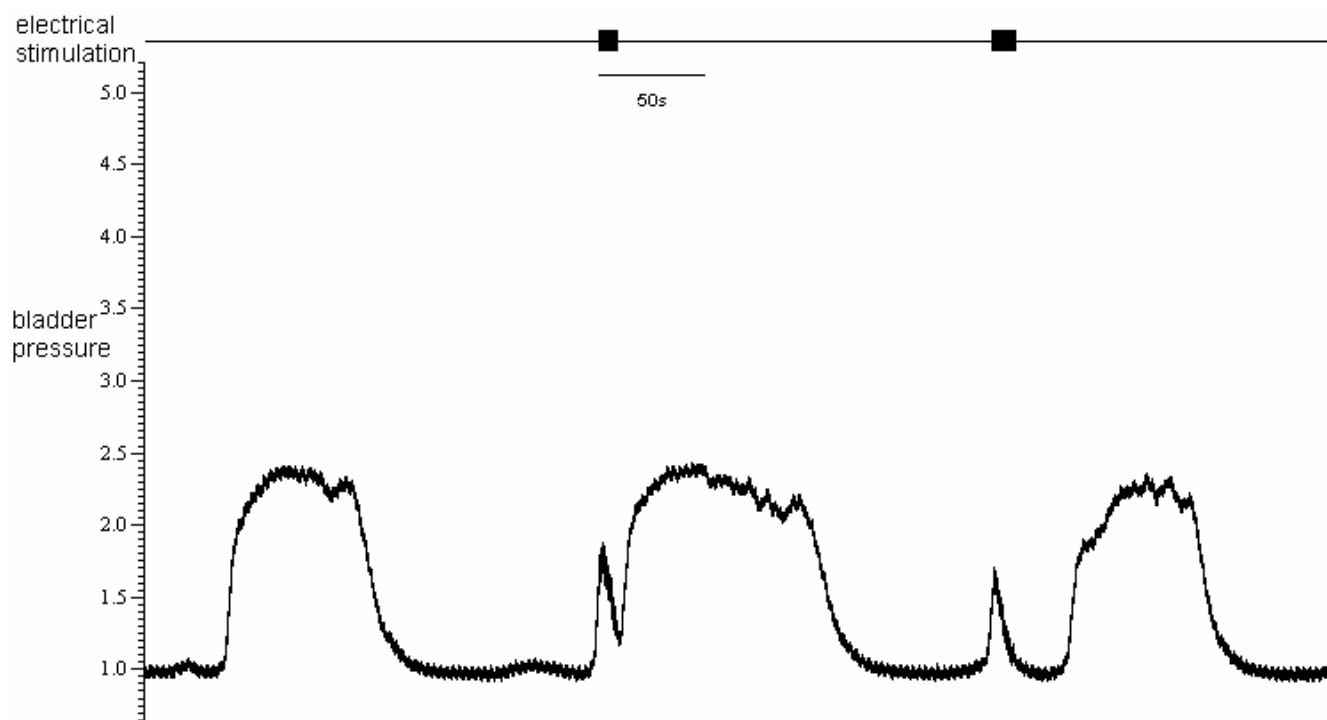


Figure 1 Typical response of bladder pressure to electrical stimulation in the putamen. Upper trace show electrical stimulation and lower trace show bladder pressure, respectively. Electrical stimulation terminated bladder contraction just after starting. Duration of repetitive stimulation (0.2 ms pulses at 100 Hz, 400 μ A pulse amplitude) is indicated by thick line.