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### Effect of septal lesions on acetylcholine output from the cerebral cortex in the cat

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Adult cats were immobilized by a transection made at the mid-pontine pretrigeminal level by means of a stereotaxically oriented spatula under halothane anaesthesia. The anaesthesia was discontinued and the cats resumed spontaneous respiration. Blood pressure was normal and the temperature was maintained at 37° C. Electrocoagulative lesions were stereotaxically placed in the septal region according to the coordinates of the cat atlas of Jasper & Ajmone Marsan (1954). At the end of the experiments the position and extent of the lesions were checked by histological examination. Cats in which the lesions were not correctly placed were considered sham operated animals.

Acetylcholine (ACh) output was determined by placing collecting cylinders filled with eserinizied Ringers solution on the frontal cortex according to the method of Mitchell (1963). Every 10 min the solution was changed and bioassayed on the dorsal muscle of the leech.

The results are expressed in Table 1. For each cat the mean of at least three collecting periods before and after drug administration was used. Under resting conditions there was no difference in ACh output between controls and cats with septal lesion. However, the increase in ACh output caused by intravenous administration of (+)-amphetamine sulphate (Pepeu & Bartolini, 1968) is completely prevented by the septal lesions and that induced by local application of hyoscine hydrobromide (Bartolini & Pepeu, 1967) is significantly reduced.

These results emphasize the importance of the septum in the cholinergic pathways ascending to the cerebral cortex.

TABLE 1. *Effect of amphetamine and of hyoscine on ACh output from the cerebral cortex in cats with septal lesions*

Drug	Controls	ACh output ng/10 min per cm <sup>2</sup> ± s.e.	Sham operation
		Septal lesions	
None	13.9 ± 1.2 (8)	11.8 ± 0.6 (10)	11.4 ± 0.9 (7)
Amphetamine 2.5 mg/kg i.v.	28.4 ± 3.8 (8)*	11.7 ± 1.0 (6)	20.1 ± 1.3 (4)†
Hyoscine 1 µg/ml locally	40.4 ± 2.4 (8)†	23.6 ± 2.2 (3)†	33.6 ± 7.2 (3)‡

Number of cats in brackets.

\* Different from none with  $P=0.01$ .

† Different from controls with  $P=0.01$ .

‡ Different from none with  $P=0.01$ .

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