

hypothalamus, are clearly anterior to the limits of the haematoma (fig). Moreover, the absence of weakness suggests that the internal capsule, located between the haematoma and the hypothalamus, is unaffected. Hypothermia might therefore be ascribed to a damage to the efferent pathways from the hypothalamus to the brainstem.

Bilateral lesions of the hypothalamus seem necessary to produce thermic dysregulation, whereas unilateral damage to the medulla oblongata appears to be sufficient.⁶ In our case, the initial downward gaze palsy indicates a bilateral involvement of the upper mesencephalon.⁷ This can be compared to Wernicke's encephalopathy where hypothermia may occur, and where the mesodiencephalic lesions, although more extended rostro-caudally, are bilateral.⁸

To our knowledge, no previous observation of hypothermia related to a mesodiencephalic lesion has previously been reported. Its rarity might be explained by the need for bilateral lesions, and the fact that hypothermia may go unnoticed.

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Intranasal apomorphine: a new treatment in Parkinson's disease

Apomorphine, a directly acting dopamine agonist, has recently been used in the treatment of Parkinson's disease complicated by motor fluctuations. Benefit is seen rapidly and reliably following subcutaneous injection. We have sought alternative, more convenient routes of delivery for the drug. Effective mucosal absorption has been reported¹ and we now describe the use of apomorphine delivered intranasally.

Eight patients with Parkinson's disease were studied. Their mean age was 58.1 years (48-70), duration of disease 12.9 years (5-22) and length of treatment with levodopa 11.8

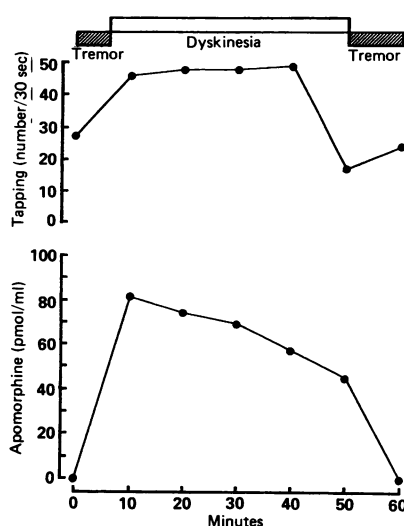


Figure The motor response and plasma concentration following single 6mg intranasal administration of apomorphine.

years (4-19). All had severe on-off fluctuations which had already been shown to respond to intermittent subcutaneous injections of apomorphine.

Patients were assessed in an off period following withdrawal of usual medication using a modified Webster rating scale,² timed walking over a 12 metre course and unilateral hand-tapping for 30s on digital counters mounted 20 centimetres apart. Apomorphine solution (10mg/ml) was administered, intranasally, using a metered-dose device and the above assessments were repeated at regular intervals until motor performance returned to baseline.

In seven cases there was a prompt response to 6mg (0.6ml) intranasal apomorphine. No adverse effects were noted and the nasal spray caused no local irritation. In these seven patients the mean Webster scores improved

from 21.8 to 10.9; walking times from 17.3 to 9.0 seconds; and tapping counts from 29 to 50. The onset of the motor response occurred after a mean interval of 8.9 minutes (6-15) and persisted for a mean duration of 44 minutes (36-55). Similar times were reported by the patients for subcutaneous use and equivalent improvements in the measures of Parkinsonism were also seen with both methods of administration. The onset and duration of response appeared to correlate with blood levels of apomorphine obtained in one case (fig). The intranasal dose was between 1.5 and twice the subcutaneous one. The patient who did not respond to 6mg did so following a larger dose of 8mg. She had a long history of nasal congestion, perhaps hindering the mucosal absorption of apomorphine.

This preliminary study suggests that intranasal delivery may offer an effective alternative to subcutaneous injection of apomorphine. The benefits of the latter, including the speed and quality of motor response, appear to be retained in most cases with this simpler technique, prompting further evaluation of its long-term use.

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Somatostatin in cerebrospinal fluid after generalised convulsions or cerebral infarction in humans

A role for somatostatin in the generation of epileptic seizures is discussed as increased concentrations of this peptide in epileptic foci have been reported.¹ In the cerebrospinal fluid (CSF) of rats increased levels of somatostatin-like immunoreactivity (SIR) were found following ethylenetetrazol-induced convulsions.² The same group of investigators, however, was unable to demonstrate a change of CSF SIR levels in nine epileptic patients presenting with generalised convulsions.³

We have measured SIR by specific radioimmunoassay⁴ in the CSF of 16 patients with epilepsy (table). Of these, eight patients were

treated with phenytoin, two with phenytoin and phenobarbital, two with carbamazepine and primidone, one with bromazepam. Three patients received no anti-convulsant drugs. There were no significant differences or trends in SIR levels apparent when patients were grouped according to their drug treatment.

In six patients generalised convulsions preceded the lumbar puncture by periods of several hours to three days. Their levels were compared with those of epileptic patients without recent seizures, of control patients without proven neurological diseases and of patients with cardiovascular disease (CVD) and cerebral infarction. The mean level of the epileptic patients was not significantly different from that of the control patient group and that of the group of patients with

Table Clinical data and SIR levels

Group	n	Age mean (SD)	Sex (female/male)	SIR mean (SD) pmol/l
Control patients	27	35 (3)	10/17	113.9 (6.3)
Epileptic patients	16	46 (4)	6/10	135.6 (9.4)
Subgroup with recent convulsion	6	52 (8)	2/4	166.6 (12.3*)
Cerebrovascular disease	20	51 (4)	5/15	125.5 (11.3)
Subgroup with recent infarction	5	54 (6)	1/4	184.6 (21.6**)

*significantly different from epileptic patients ($p < 0.01$, Wilcoxon test)

**significantly different from cerebrovascular disease ($p < 0.01$)