Postoperative Opisthotonus Following the use of Propofol

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SUMMARY: A case of opisthotonus following the use of the anaesthetic induction agent propofol is described. The patient was a woman with a known history of epilepsy. It is recommended that propofol should not be used in such patients.

Case Report
A 20 year old housewife presented with a two day history of vaginal bleeding in the ninth week of pregnancy. Examination revealed an enlarged tender uterus with an open cervix. A diagnosis of inevitable abortion was made and she was admitted for the evacuation of retained products of conception under general anaesthesia.

She was known to have a nine year history of poorly controlled temporal lobe and grand mal epilepsy, although she had had no fits during the previous three months. Current therapy consisted of sodium valproate 400mg tds and 800mg nocte, with carbamazepine 200mg bd. Recent out-patient review had shown an adequate plasma concentration of sodium valproate. A general anaesthetic eight months earlier had been uneventful.

On examination she was found to be otherwise fit and to weigh 50 kg. She was premedicated with temazepam 20mg orally one hour pre-operatively.

Anaesthesia was induced with alfentanil 0.5mg and propofol 100mg intravenously. She was given 100% oxygen by mask and anaesthesia maintained with a further 0.25mg alfentanil and 40mg propofol. Syntocinon 5 units was given at the end of the five minute procedure. Blood pressure and pulse remained stable throughout.

In the recovery area she awoke normally and rubbed her face but then became increasingly restless over the period of about one minute. She then developed opisthotonus with hyperextension of neck and back, and extension of all limbs. The spasm lasted about forty seconds and was of such force that she threw herself from the trolley and was saved by the recovery staff from injuring herself on the floor.

Over the next twenty minutes she had a further six attacks without regaining consciousness. Noise and movement seemed to act as triggering agents. During each attack there was no respiration. The eyes remained central with the pupils dilated. There was no clonic phase or incontinence. Between attacks it was noted that the reflexes were brisk and that the plantars were downgoing. These spasms were entirely different from the description of fits that she had had in the past.

She was treated with diazemuls 10mg intravenously which gradually controlled the attacks. The patient regained consciousness and despite heavy sedation was orientated in space and time. She was admitted to the ITU overnight but no further spasms were observed. Next morning she felt well and was discharged from hospital two days later.

Discussion
Propofol is a new, short acting intravenous anaesthetic agent. It is commonly used alone or in combination with an opiate for short operative procedures. It may also be used as an infusion to maintain anaesthesia. Until recently it was thought to have little or no convulsive activity; however studies on its use during ECT have been confusing with results suggesting both pro and anti-convulsive activity.

Opisthotonus is defined as spasm of the extensor muscles throughout the length of the body, which then rests on the occiput and heels with the back arched. A common cause is tetanus, but it may also be due to strychnine poisoning or spinal meningitis, or occur as an hysterical manifestation. In the case of strychnine these tonic extensor convulsions reflect a reduction in inhibition, including the reciprocal inhibition existing between antagonistic muscles. The pattern of convolution is determined by the most powerful muscles acting on a given joint. In most animals, including man, this gives rise to the characteristic tonic extension of the body and all limbs.

During the last year reports have appeared of opisthotonus in the post operative period and a possible association with the use of propofol. Most of the cases show the following features. The patients have either a personal or family history of epilepsy.

They have received propofol, usually in association with an opiate. The operation was uneventful and so was the early part of recovery.

The patients have then shown restlessness followed by intense opisthotonus, often throwing themselves into the air. There may be grand mal fitting at a later stage. Episodic opisthotonus may last for up to 23 days post operatively.

In one case the patient had also been exposed to enflurane, local anaesthetic agents and phenothiazines. The possibility that these were implicated was...
suggested. In the case reported above, however, the only other agents that could be involved are alfentanil and syntocinon.

Several other drugs commonly used in anaesthetic practice have been considered epileptogenic. Enflurane produces EEG changes of an epileptiform nature, particularly if hypocapnoea is present. Similar EEG changes may be seen after methohexitone. Laudanosine, a metabolite of atracurium, has analeptic and convulsant effects but only in concentrations higher than those found in normal clinical practice.

Syntocinon is a synthetic form of oxytocin. Very rarely this has produced life threatening side effects such as cerebral oedema and convulsions.

Hopkins noted that most of the cases had received opiates as well as propofol, and stated that fentanyl may increase the plasma concentration of propofol by up to 50%. Alfentanil, however, has no effect on the pharmokinetic properties of propofol.

It would seem certain that there is a direct association between these spasms and the use of propofol rather than another drug. Whether it is the agent itself or a metabolite is more difficult to assess. Also, whilst opisthotonus may be seen as a manifestation of epilepsy, the pattern here more closely resembles an action on the spinal cord.

Propofol is being used with increasing frequency in military hospitals, but it is recommended that it be avoided in patients with either a personal or family history of epilepsy.

REFERENCES
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*J R Army Med Corps* 1989 135: 79-80
doi: 10.1136/jramc-135-02-07

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