Lamotrigine control of idiopathic trigeminal neuralgia

Carbamazepine is the drug of choice for idiopathic trigeminal neuralgia, being effective initially in 75% of patients; no other available drug is as effective,1 although primidone and oxcarbazepine may be superior.2 Unfortunately, up to one third of patients cannot tolerate the drug in the doses required to alleviate the pain, and lamotrigine may cause aplastic anaemia, agranulocytosis, and hyperinsensitivity reactions.3 Carbamazepine may control idiopathic trigeminal neuralgia by suppressing Na+ currents either in the trigeminal caudal nucleus or, not as convincingly, in the gasserian ganglion.7 Recently, a novel antiepileptic drug lamotrigine has become available, and this is at least as potent as carbamazepine in inactivating Na+ currents,4 with fewer side effects. A search of the medical literature did not disclose previous studies of lamotrigine effects on idiopathic trigeminal neuralgia. Thus we obtained authorisation to prescribe lamotrigine in four patients with idiopathic trigeminal neuralgia, from whom informed consent was obtained.

Patient 1, a 55 year old man, developed typical idiopathic trigeminal neuralgia paroxysms in the right upper and lower branches. Oral carbamazepine (200 mg twice daily) almost completely controlled the paroxysms, in view of possible complicating side effects, the patient accepted the switch to lamotrigine. Carbamazepine was then stopped and replaced with lamotrigine on the following day (at which time the paroxysms had recurred) at 50 mg once a day by mouth, increased by 50 mg aliquots each day. At 100 mg lamotrigine paroxysms were controlled to a large degree, and relief grew to complete control at 100 mg three times a day. No adverse effects have been seen over six months.

Patient 2 was a 31 year old woman who developed typical idiopathic trigeminal neuralgia attacks involving the first three right branches. Carbamazepine at 200 mg twice a day almost completely controlled the paroxysms, with some attendant somnolence. At 600 mg daily, control was complete, but the patient was severely ataxic and could not drive. Discontinuation of treatment resulted in relapse. Lamotrigine produced complete relief at 400 mg in divided doses, without side effects, over six months.

Patient 3, a 75 year old woman, developed typical idiopathic trigeminal neuralgia in 1973 in the first and second left branches. Carbamazepine was effective only at 2000 mg (complete relief), with considerable side effects. Alcohol injection of the gasserian ganglion gave complete remission for three years. Subsequent recurrences were again treated with alcohol injection, but relief was always shorter. Glycerol injection was effective for four months. Idiopathic trigeminal neuralgia recurred. There were no sensory deficits or dysaesthesiae. Lamotrigine, begun as for patient 1, gave 90% relief at 150 mg three times a day by mouth. After two months, however, the economic burden on the patient led to Fogarty percutaneous compression of the gasserian ganglion, with analgesia at least for a year.

Patient 4 was a 72 year old man who had frequent attacks of idiopathic trigeminal neuralgia in the left second and third branches for a few years. A sense of burning in the gums was reported lately. Notably, 50% of the attacks presented at night. Speaking and chewing triggered intolerable pain. Carbamazepine at 200 mg twice a day initially controlled the attacks, but very soon produced cardiovascular intolerance. Carbamazepine was replaced with lamotrigine and attacks were completely controlled at 400 mg in divided doses over five months.

Lamotrigine may cause initial ataxia, diplopia, nausea, vomiting, and blurring of sight in 15–35% of the patients treated for epilepsy, but these disappear or are much reduced after dose adjustments.1 An allergic skin rash is seen in 3–17% of the patients. This can be reduced to no more than 10% if the drug is started at 50 mg once a day for the first two days, then increased by 50 mg every second day for another two weeks, and then brought to a maintenance dose of 200–400 mg in divided daily doses. A similar regimen may be applied for idiopathic trigeminal neuralgia, although a much faster dose increase should be considered for control idio- pathic trigeminal neuralgia drugs, and thus lamotrigine relief of idiopathic trigeminal neuralgia may not necessarily be due to Na+ current inactivation.7

Our preliminary data require confirmation with a placebo controlled study.

Clinical evaluation of vasospasm in subarachnoid haemorrhage by in vivo microdialysis

Patients in whom subarachnoid haemorrhage is complicated by vasospasm are at risk of developing cerebral infarction. Previous studies have suggested that monitoring may, unfortunately, be difficult. Animal experiments have shown that cerebral ischaemia is associated with raised extracellular glutamate concentrations, which can be measured by in vivo microdialysis. We have employed microdialysis with subarachnoid haemorrhage in whom extracellular glutamate was monitored, by in vivo microdialysis, for four hours every day for four days after operation.

A 38 year old farmer reported to the hospital with a five day history of severe frontal headaches, nausea, and vomiting. Before admission he had had an episode of right sided mild focal vasospasm for 24 hours. He also complained of photophobia and mild neck stiffness. Except for the neck stiffness no focal neurological findings were evident on examination. Lumbar puncture showed normal pressure, with normal opening pressures, and no signs of raised intracranial pressure. Intracerebral microdialysis was performed as previously described8 after stabilisation of the patient in the intensive care unit. The microdialysis catheter was placed at coordinates 298–09 (19–9) mmol/l. This was “high” in comparison with the baseline normal in humans (20–25 mmol/l) as previously reported.2 An angiogram one day later showed severe focal vasospasm (no filling) of the right anterior cerebral artery. Subsequent CT showed bilateral frontal hypodensities suggesting ischaemic changes (fig 1). The early severe focal vasospasm could be possibly related to the aneurysm clip. At the time of the initial study, the patient was very drowsy. The samples on day 2 disclosed a significant decrease in the glutamate concentration to 140 (8–106) μmol/l (fig 2). This correlated with a complete clinical improvement in the level of consciousness in the patient. On day 3 there was some increase in drowsiness, possibly related to generalised vasospasm and impending bifrontal ischaemia. The microdialysis fluid collections on this day also showed a significant increase in extracellular glutamate concentrations, to 242–53 (19–71) mmol/l. On day 4 clinical state improved with the patient being fully awake. The microdialysis recordings during this time showed a progressive decline in the glutamate concentrations to 42–13 (3–77) μmol/l (see fig 2). The patient was approved by an independent ethics committee on human experimentation at the University of Saskatchewan and informed consent was obtained before the study.

Microdialysis is a good in vivo neurotransmitter. The increase in extracellular glutamate in cerebral ischaemia has been well documented in small animals with the use of in vivo microdialysis and ischaemia. Some microdialysis induced glutamate response has also been seen in the human brain.4 This increase in glutamate may be important in the development of selective neuronal damage and cere-