LETTERS TO THE EDITOR

Death after ecstasy ingestion: neuropathological findings

Ecstasy (3,4-methylenedioxymethamphetamine; MDMA) is a widely used recreational drug that has recently been associated with a syndrome of hyperpyrexia, restlessness, rhabdomyolysis, and acute renal and hepatic failure and at least nine deaths have been reported in the United Kingdom.¹ There are no neuropathological reports of patients who died after taking ecstasy.

A 30 year old man attended a "rave" party where he took ecstasy, heroin, and amphetamine. The next day he drank large amounts of alcohol and was found unconscious in a pool of vomit some hours later. He had a convulsion and was admitted to hospital. He was pyrexial (38.5°C), and remained so until his death five weeks later. Creatine kinase was 11 178 IU/l (normal < 300 IU/l) on admission and 3468 IU/l four days later. He remained comatose and had no hypertonia, but had occasional generalised muscle spasms. A chest infection was treated with antibiotics. No evidence of hepatic or renal failure or diffuse intravascular coagulopathy was found. Brain CT showed clearly defined low densities in the globus pallidus bilaterally.

Postmortem examination showed bronchopneumonia, lung abscess, and pulmonary embolism. The brain weighed 1450 g after fixation. Coronal slices showed clearly demarcated bilateral necrosis of the globus pallidus (figure). There were small foci of necrosis in the white matter.

Histological examination confirmed necrosis of the globus pallidus. There was intimal proliferation in large blood vessels without necrosis or inflammation. The substantia nigra was gliotic. There was mild astrocytic gliosis in the amygdala and hypothalamus.

The cerebral white matter showed diffuse gliosis and spongy change without myelin debris or inflammation and sparing only the subcortical zones. Well defined foci of necrosis up to 0.5 cm in diameter were identified. The cerebral cortex, hippocampus, brainstem, and cerebellum were normal.

A major problem in understanding the

Coronal slice of the fixed brain showing necrosis of the globus pallidus bilaterally and foci of white matter necrosis (arrows).

pathology of this case is that, like most drug abusers, the patient took a combination of drugs. Consumption of alcohol may have potentiated their effects. The most striking neuropathological change was necrosis of the globus pallidus, an area rich in serotonergic and dopaminergic nerve terminals. Pallidal blood vessels showed changes compatible with prolonged vasospasm, possibly the result of local release of serotonin and other biogenic amines induced by ecstasy or amphetamine. Blood vessel changes have been noted after cocaine and amphetamine abuse.² The pathology resembles that of carbon monoxide toxicity, but similar white matter changes are described in nine cases of heroin abuse.³ Damage to the globus pallidus is found in hypoxic-ischaemic cerebral injury but almost always in association with damage to the hippocampus or other areas of the cerebral cortex.

Although at least nine deaths after ingestion of ecstasy have been reported,¹ neuropathological findings have not previously been described. It is important that these cases be fully studied if we are to improve our understanding of the effects of these drugs on the human brain.

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Lewy body dysphagia

Swallowing disorders are encountered with increasing frequency in elderly people.¹ Swallowing depends on the complex interplay of sensory pathways from the tongue, mouth, pharynx, and larynx (cranial nerves V, VII, IX, X) with coordinated autonomic, voluntary, and reflex contractions involving cranial nerves V, VII, X, XI, and XII. It is therefore not surprising that dysphagia complicates a variety of neurological disorders, many of which are more common in the elderly population, such as pseudobulbar palsy due to cerebrovascular disease.¹ It is, however, seldom the sole presenting feature of neurological disorders.¹

We describe two patients with isolated painless progressive dysphagia who at neuropathological examination showed severe neuronal loss, Lewy bodies, and dystrophic neurites in the dorsal vagal nuclei, with only a few Lewy bodies in the substantia nigra, nucleus basalis of Meynert, and cerebral cortex. These patients represent a new presentation of Lewy body-associated disease.

Patient 1 was an 80 year old retired man who developed painless progressive dysphagia for solids, and to a lesser extent liquids, over a two month period. He described difficulty initiating the swallow, with regurgitation of food (solids more than liquids) from the upper oesophagus or pharynx. He lost 6 kg in weight over this period. His appetite was normal and there was no vomiting or haematemesis. Five years earlier a peptic ulcer had been diagnosed at endoscopy and successfully treated with ranitidine. Two years earlier he developed a mild left oculomotor nerve palsy of unknown cause. He took senna and fybogel for constipation, propranolol (40 mg twice daily) for long-standing paroxysmal supraventricular tachycardia, and temazepam as a hypnotic.

Examination was unremarkable except for the presence of a partial left oculomotor palsy. In particular there was no evidence of Parkinson's disease or cognitive impairment.

Endoscopic examination showed no abnormality in the stomach or oesophagus. A limited barium swallow showed the oesophagus to be slightly dilated with a minor hold up of barium at the oesophago-gastric junction. Computed tomography of the chest was normal.

He developed fatal bronchopneumonia while in hospital.

Patient 2 was an 88 year old woman who developed painless progressive dysphagia for solids more than liquids over three months. After swallowing, food was immediately regurgitated from the pharynx or oesophagus. There was no regurgitation after the meal was completed. Appetite was normal and she had no nausea or vomiting. She had lost 12 kg in weight over the preceding three months. One month before the onset of dysphagia, she had suddenly developed mild pyramidal weakness of the left arm, which was diagnosed as a stroke. She was otherwise well, took no medication, and lived an independent life.

Figure 1 Swollen cell in dorsal vagal nucleus from patient 2 showing Lewy body (haematoxylin and eosin). Bar = 100 µm.