Reminder of important clinical lesson

Posterior reversible encephalopathy syndrome (PRES) complicating the 'legal high' mephedrone

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Summary

The authors report a 19-year-old woman who developed convulsions preceded by nasal ingestion of a cocaine mimic named 'the bubble' or mephedrone, obtained legally from a 'headshop' in Dublin. Characteristic posterior white matter oedema on brain imaging after the seizure suggested a diagnosis of posterior reversible encephalopathy syndrome (PRES). While PRES has been rarely associated with cocaine ingestion, this is the first report of an association with mephedrone.

BACKGROUND

While posterior reversible encephalopathy syndrome (PRES) has been rarely associated with cocaine ingestion, this is the first report of an association with mephedrone. In addition to that, this case report should be added to the growing list of published evidence of the potential dangers of mephedrone use and compounds like it.

CASE PRESENTATION

A 19-year-old Irish woman was admitted to our hospital in April 2010 with abdominal pain secondary to alcohol-induced pancreatitis. She had a background of excessive alcohol intake and recurrent pancreatitis. Upon admission she was placed on supportive care, antibiotics, chlordiazepoxide and multivitamins. On the second day of her admission she had a witnessed convulsive seizure lasting 4 min. Her neurological examination was normal, in particular; there was no loss of visual acuity and no field defects detectable on confrontational examination (formal

perimetry was not performed). Systolic blood pressure was recorded > 160 mm Hg. The patient admitted to snorting a cocaine mimic named 'the bubble' (mephedrone) just prior to admission. Laboratory values on admission showed neutrophil leucocytosis (white cell count 16.9; neutrophils 12.8), with normal corrected bicarbonate level, renal, coagulation profiles and calcium. Her liver function tests (LFTs) revealed γ -glutamyltransferase level of 47 (normal range: 5–40) with normal other LFTs. Her serum pancreatic amylase level was very high to 2577 (normal range: 0–100). We did not believe that these metabolic abnormalities could have caused her neurological presentation. An initial CT suggested acute posterior cerebral oedema and an urgent MRI brain showed subcortical hyperintensities consistent with a diagnosis of PRES (figure 1a). She was treated with an intravenous infusion of 1 g/h magnesium sulphate and intravenous labetalol. Further seizures necessitated the addition of the anticonvulsant levetiracetam. She had a repeat MRI 10 days later demonstrating complete resolu-

Figure 1 (a) Brain MRI showing bioccipital hypocortical intensities (b) Brain MRI showing complete resolution of previously identified bioccipital hypocortical intensities.

tion of the findings and she has had no further seizures to date (figure 1b).

INVESTIGATIONS

Two brain MRIs (provided).

OUTCOME AND FOLLOW-UP

She had a repeat MRI 10 days later demonstrating complete resolution of the findings and she has had no further seizures to date (figure 1b).

DISCUSSION

Toxic leukoencephalopathy has been described with inhalation and intravenous consumption of heroin and cocaine in the past.¹ The clinical picture varies widely but the imaging and histological features are characteristic. MRI typically reveals diffuse bihemispheric white matter lesions.^{2–5} Histologically, there is extensive spongiform degeneration of the cerebral white matter.^{6–7} Only one case report exists of PRES associated with cocaine⁸ and there are no documented cases associated with mephedrone. A recent report of calls to the UK national poisons information service describes the clinical characteristics documented from 131 telephone enquiries on mephedrone alone and with alcohol.⁹ The most common psychotropic effects were agitation, confusion, aggression and headache in over 40% of users. There were four reports of convulsions (3%). Physical effects included palpitations, tachycardia and vomiting in 25% of ingestions. There was one reported death following cardiac arrest. A further death has been reported in Sweden attributed to mephedrone and a number of other deaths in the UK are being investigated as possibly related to the drug.¹⁰

Synthetic cathinones have been increasingly reported via a European early warning system as a legal high in the last few years.¹¹ At present, fifteen of these substances are being monitored, including mephedrone, methylone and methedrone. Mephedrone is a derivative of methcathinone—a scheduled drug in the 1971 UN Convention. It appeared for the first time in Europe in 2007, and seems to have gained popularity among young drug users, leading to a specific demand for this substance. Control measures on mephedrone have recently been introduced by Denmark, Estonia, Ireland, Germany, Romania, Sweden, the United Kingdom, Croatia and Norway.¹⁰

Mephedrone is readily available on the Internet, where it may be sold as a legal alternative to cocaine or ecstasy.¹² The substance is variously advertised as a ‘research chemical’, ‘bath salts’, ‘for botanical research’, ‘plant food’ or ‘plant feeder’, often with a note saying ‘not for human consumption’ in order to circumvent potential control mechanisms. Often, the list of ingredients gives no indication of the presence of psychoactive substances. A search for online mephedrone shops conducted in March 2010 in

English showed that at least 77 websites were selling the substance.¹⁰ Most of these websites sold only mephedrone and were based in the United Kingdom. Following the United Kingdom’s classifying of mephedrone as a controlled drug in April 2010, the majority of mephedrone sites have ceased to exist.¹⁰

Despite this, mephedrone use appears widespread. Data on the use of 29 substances, including a number of ‘legal highs’, were collected in an online survey conducted in late 2009, in collaboration with the United Kingdom’s dance music magazine Mixmag.¹⁰ Mephedrone was reported as the fourth most commonly used drug (after cannabis, ecstasy and cocaine) and the most used ‘legal high’ among the 2295 respondents. This case report should be added to the growing list of published evidence of the potential dangers of mephedrone use and compounds like it.¹³

Learning points

- The so called ‘legal high’ mephedrone is not a safe substance and it can lead to dangerous neurological complications like posterior reversible encephalopathy.

Competing interests None.

Patient consent Obtained.

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