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Dilated pupils, dry mouth and dizziness

A case study

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Case study

A man, 44 years of age, presented with a 4 hour history of dizziness, blurred vision, dry mouth and dilated pupils. He was previously well and on no medications and there was no history of recent drug use, head injury or focal neurological symptoms. On questioning, the patient said that he had eaten lupini beans for lunch but that he hadn't had enough time to soak them for long enough before eating them.

On examination his Glasgow Coma Score (GCS) was 15/15, heart rate 98 bpm, blood pressure 144/98, temperature 37.8°C and respiratory rate 18 breaths/minute. His skin was warm and dry with dry mucous membranes.

His pupils were dilated at 6 mm and were nonreactive. Cardiovascular, respiratory, abdominal and neurological examinations were normal. He was unable to pass urine. Electrocardiogram showed normal sinus rhythm with a rate of 98 bpm.

Question 1

This patient exhibits some of the features of a well known clinical syndrome. Which one?

Question 2

What are the possible causes of this condition and what is the significance of this patient's dietary history?

Question 3

How would you manage this patient?

Answer 1

This patient exhibits some of the clinical features

of anticholinergic syndrome (ACS). Features of this clinical syndrome include warm and dry skin, mild hyperthermia, dry mucous membranes, tremor, mydriasis, tachycardia, urinary retention, and absent bowel sounds. Confusion and hallucination can occur if central anticholinergic syndrome develops. The mnemonic 'red as a beet, dry as a bone, blind as a bat, mad as a hatter, and hot as a hare' can be helpful as an *aide memoire*.

Answer 2

Anticholinergic syndrome is caused by ingestion of a drug or plant that has anticholinergic effects. Medications (particularly in overdose) are the commonest cause in the general practice setting and these include antihistamines, antipsychotics, antispasmodics and tricyclic antidepressants. Anticholinergic syndrome can also be caused by ingestion of alkaloid containing food such as lupini beans and some varieties of mushrooms. This patient's history of recent ingestion of inadequately soaked lupini beans is important as the beans may have been the source of alkaloid which caused his ACS.

Answer 3

Management is supportive. The patient should be referred to hospital for monitoring and oxygen and/or intravenous fluid as required. Benzodiazepines can be given for agitation and psychosis and physostigmine for central ACS.

Discussion

Lupini (or lupine beans) are the seeds of plants of the *Lupinus* genus. These plants have traditionally been grown as ornamentals and because they are in the legume family, when they go to seed, they make pods filled with beans. Lupini beans from white, Andean, blue or yellow lupines (*Figure 1*) are commonly eaten as



Figure 1. Lupini beans

intravenous fluids. Pathology results including full blood count, urea, creatinine, electrolytes, random glucose and liver function tests were all within the normal range. The patient developed urinary retention requiring an indwelling catheter, which drained about 800 mL. The catheter was removed the following morning and he was able to pass urine. As all his symptoms settled spontaneously overnight, he was discharged home.

Resources

- Pingault NM, Gibbs RA, Barclay AM, Monaghan M. Two cases of anticholinergic syndrome associated with consumption of bitter lupin flour. *Med J Aust* 2009;191:173–4
- Food Standards Australia New Zealand: www.foodstandards.gov.au
- Toxicological review: www.foodstandards.gov.au/_srcfiles/TR3.pdf.

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an appetizer in southern Europe and the Middle East. Importantly, in their natural state lupini beans are very bitter. The bitter taste comes from the presence of sparteine (a dibasic quinolizidine alkaloid), which can be poisonous if the beans are not prepared properly.

An elaborate series of steps is necessary to make these beans palatable and safe to consume. ‘Debittering’ involves soaking in water overnight and then boiling for several hours to leach the bitterness out of the beans into the water. The water is then discarded and replaced with fresh water. These steps are repeated 2–3 times before the beans are salted and ready for consumption. In this case, the patient consumed the beans after only a few hours of soaking leading to ingestion of the alkaloids resulting in ACS.

Case follow up

The patient was admitted to hospital and was managed with general supportive measures and

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