Introduction

Lupini beans are yellow or green, protein enriched legumes, often consumed in the Mediterranean, as bar nuts in Europe and are often mixed into the ceviche and stews in South America.

Lupini poisoning can occur if prepared incorrectly. Traditionally lupin beans are soaked in water which allows the removal of these very bitter to taste quinolizidine alkaloids from the beans. Improper preparation and inadequate soaking can cause elevated levels of these anticholinergic alkaloids to remain in the beans resulting in anticholinergic symptoms.

**Manifestations of anticholinergic toxicity include:**
- Red as a beet: Flushing
- Dry as a bone: Anhidrosis
- Hot as a hare: Hyperthermia
- Blind as a bat: Blurry vision
- Mad as a hatter: Agitated delirium
- Full as a flask: Urinary retention
- Decreased bowel sounds
- Tachycardia

The lethal dose of lupini is about 30 mg/kg. There are very few published articles of lupini bean poisoning including one in Australia and one in Mediterranean which included lupini bean flour consumption.

Case

A 66 year old South American gentleman with no significant past medical history presented with acute, brief onset of weakness, blurry vision, dry mouth, and lightheadedness.

The patient was in his usual state of health, performing grocery shopping in the morning when he started experiencing the symptoms mentioned above. The patient's wife subsequently noticed him to have slurred speech and uncontrollable tremors which prompted her to bring her husband to the ED. The patient denied any use of medications, including herbal and over the counter medications, and illicit drugs.

**Vitals:** Afebrile, BP 119/84, HR 60, RR 21, O2 98% on room air

**Physical Exam:** 6mm dilated pupils bilaterally, blurry vision, and dry mucosal membrane, unsteady gait with rest of neurological exam unremarkable. Orthostatic vitals were positive. His systolic blood pressure dropped from 124 to 95 mmHg.

**EKG:** Sinus bradycardia with premature atrial complexes otherwise unremarkable

**Labs:** CBC and Chemistry was unremarkable

**Imaging:** As there was an initial concern for stroke, the patient underwent stroke workup which included CT scan of the head, CT angiogram of the head and neck, echocardiogram, EKG, and MRI of Head which were all unremarkable.

On further questioning, the patient disclosed that his symptoms started one hour prior to drinking concentrated water in which lupini beans were soaked in. During his hospitalized stay, the patient had a rapid recovery with all his symptoms resolved by the following day and was treated conservatively with IV fluids.

Conclusion

Lupini bean poisoning can present with anticholinergic toxicity as this patient did. As clinicians, we can see many causes of anticholinergic poisoning including medications and plants such as Nightshade species, Jimson weed, and certain mushroom species. Other medical conditions that may appear similar to anticholinergic toxicity are TIA, stroke, hypoglycemia, alcohol/benzodiazepine withdrawal, and drug intoxication.

**Treatment:** Management is usually supportive however patients who manifest with both peripheral and moderate central (agitation/delirium) anticholinergic toxicity, without contraindications to physostigmine, should be treated with this medication. Physostigmine can cross the blood brain barrier unlike other medicinal carbamates (neostigmine, pyridostigmine). For that reason, it is beneficial in central anticholinergic toxicity. Agitation and seizures can also be treated with benzodiazepines

Life threatening conditions should always be ruled out first. Always obtain an EKG to assess for QRS prolongation and dysrhythmia. This case reiterates the importance of a detailed history.

References

Two cases of anticholinergic syndrome associated with consumption of bitter lupin flour

Nevada M Pingault, Robyn A Gibbs, Alexander M Barclay and Mark Monaghan


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