

Cuscuta spp. as possible source of anti-cholinergic toxicity

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Introduction

Anticholinergic Syndrome has long been described with ingestion of toxic plants such as those belonging in the Solanaceae family, including the Atropa Belladonna and Datura Stramonium, or Jimsonweed. Ingestion may produce symptoms centrally, such as confusion, sleepiness, agitation, delirium, hallucinations, seizures, or peripherally, such as heart conduction problems, ileus, dysarthria, dry mouth, dry skin, flushing, hyperthermia, and urinary retention. However there are still many species and family of plants in the wild that we do not know much about. Can other plants cause such intoxication?

In this case study, we propose a different family of plants that may cause anticholinergic intoxication, the Dodder, part of the cuscutateae family of plants. There has been case reports of equine ingestion and intoxication, however not much is known of its effects on humans. We describe a case in which husband and wife couple ingests the Dodder and describe its effects on the human body.

Case Report

Mrs. KSH is a 62 year old female with hypertension, dyslipidemia and Type 2 diabetes mellitus, who presented to the ED with sleepiness, slurred speech, agitation and altered mental status after she had breakfast. Initial clinical suspicion was a stroke. CT head was performed to exclude intracranial hemorrhage or pathology, exam was unremarkable. Her husband, Mr. PH, who is a 68 year old male, had accompanied her to the ED. While his wife was being evaluated in the ED, he also started developing similar symptoms, subsequently prompting him to be worked up and treated as well.

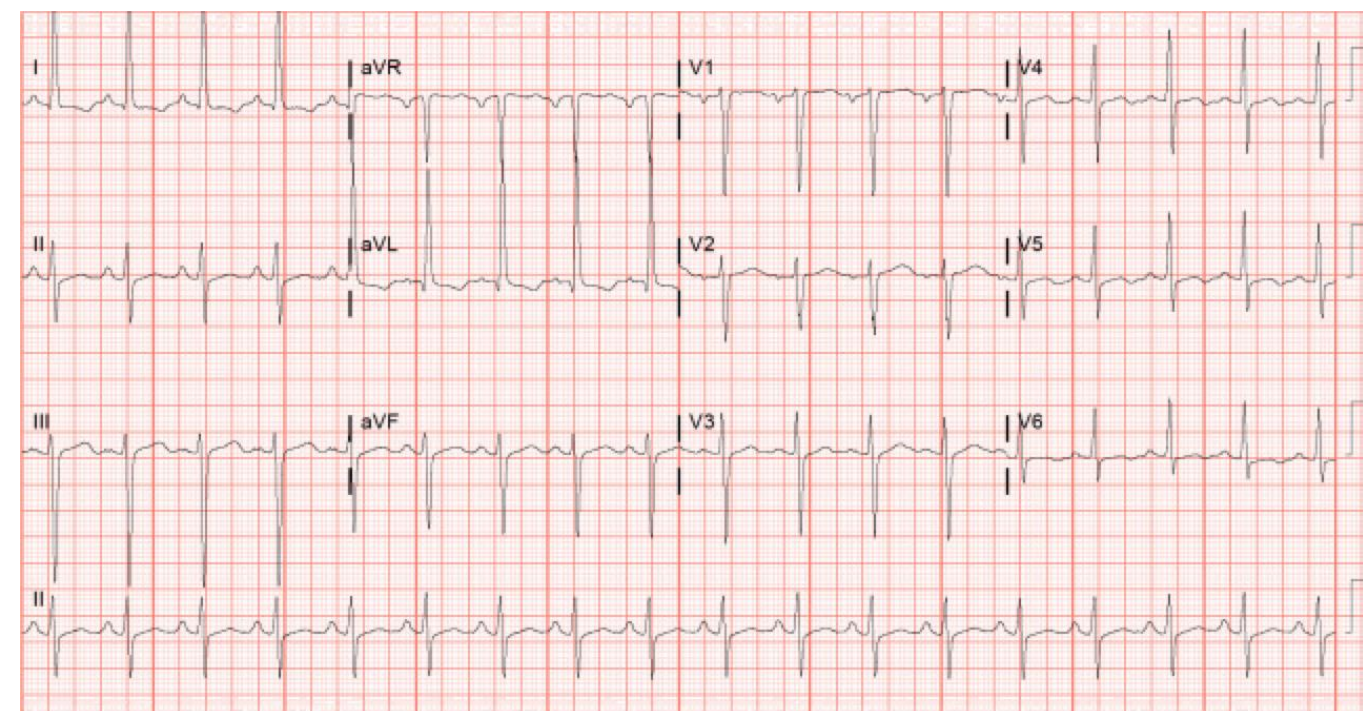
Both husband and wife had symptoms including altered mental status, dry mucous membranes, hot to the touch but dry skin, and tachycardia; both developed symptoms consisted with anti-cholinergic poisoning. Mrs. KSH was noted to have a prolonged QT interval on EKG and Mr. PH had a first degree heart block. Both husband and wife received Physostigmine in the ED, resulting in improvement in mentation. Both returned to baseline, with ability to answer questions and follow commands. But following 2.5 hours of observation in the ED, their presenting symptoms returned, therefore both were admitted for anticholinergic syndrome.

Due to their altered mental status, the majority of history was provided by their adult children, who live in the same household as the patients. Mrs. KSH and Mr. PH are avid gardeners, who have a home garden, where they grow and consume their own vegetables. They denied any pesticides used on their garden. On the morning of presentation, both had breakfast, which consisted of a home cooked meal of purple heart plant, which was obtained from their home garden. Mrs. KSH ate approximately one hour before Mr. PH because he works night shifts and was late to come home. Children endorses that their parents have used consumed purple heart from their private garden in the past, but they did not develop any symptoms previously, this is the first time. They were able to bring the plants from home and one of the components was the Dodder plant, which was usually not used in their meal.

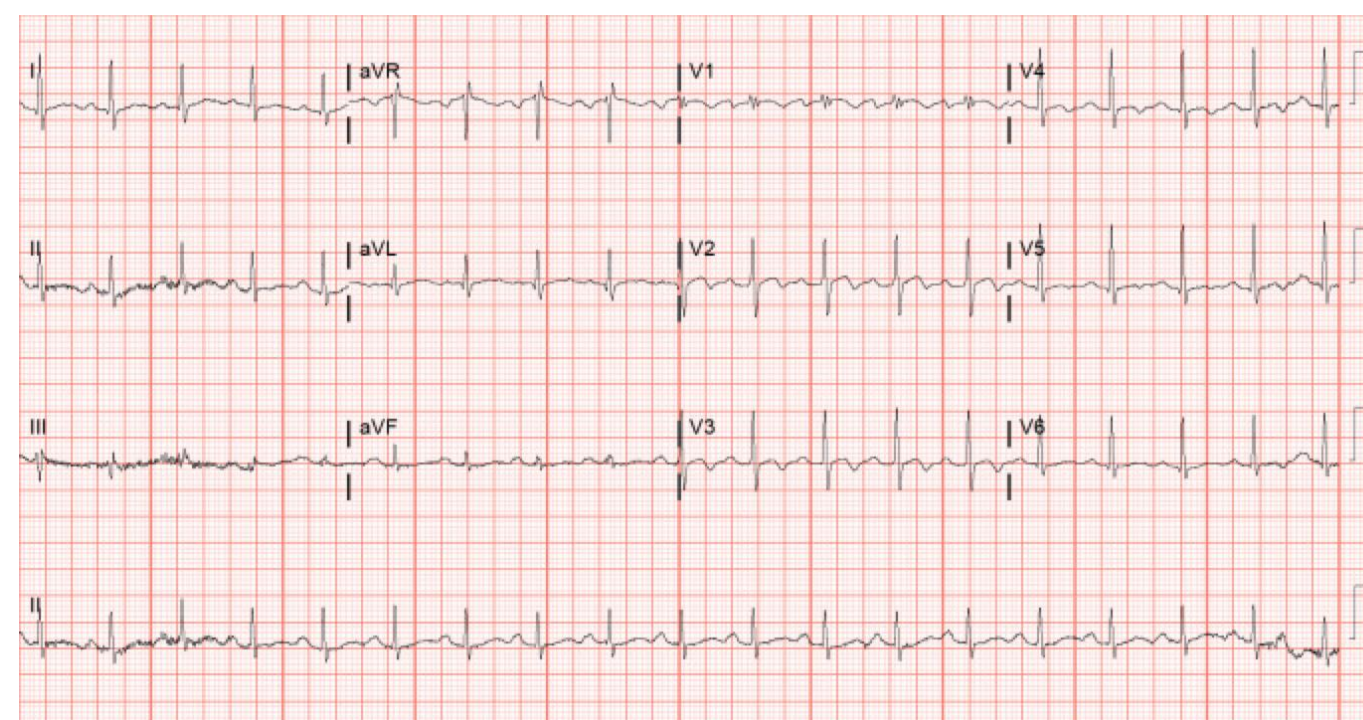
Mrs. KSH and Mr. PH was monitored closely and provided symptomatic management. Symptoms gradually resolved and both patients were discharged with no serious sequelae.

Discussion

Dodder is a parasitic plant that grows on various host plants. It belongs to the Cuscuta genus, part of the Cuscutaceae family. There are over 150 species worldwide, however Cuscuta californica, known as the chapparal dodder and California dodder, is the most common species in California, and the Cuscuta campestris, or the Golden dodder, is most prevalent species in the North America region. It is a parasitic plant that can easily be identified by their slender stem-like appearance that is usually intertwined against their host plants. They are leafless, and they usually vary between a pale green-yellow to light orange color. They may grow on a number of host plants, including a variety of garden plants, crops and even weed species, such as alfalfa.



Mrs. KSH's initial EKG



Mr. PH's initial EKG

Both patients have consumed meals made from the Purple Heart from their private garden previously without symptoms, however this episode was different. Upon further questioning and investigation, the Dodder plant was a new component to their dish. This suggests that the Dodder plant was responsible for the onset of these symptoms.

Based on literature search, there is still much unknown about the specific chemistry and metabolites of the Dodder plant, and ultimately the effects it may have on the human body. There is limited literature suggesting the use of Dodder in traditional herbal medicine for its antibacterial, antioxidant or anti-inflammatory effects, however each species seems to have a different chemistry and metabolite profile, therefore different uses due to its properties.

With that said, perhaps there is an unknown component that may lead to anticholinergic poisoning that we must pay attention to and be cognizant of. There has been case reports of equine ingestion and intoxication of dodder. Horses that were unintentionally exposed to the cuscuta epithymum, or alfalfa dodder, developed changes after ingestion of the toxin. Based on those reports, symptoms of equine intoxication include diarrhea (n=8), decreased appetite (n=7), neurological changes (n=4) and abdominal pain (n=1). Furthermore other sources describe colic, weakness, incoordination, staggering, wandering aimlessly, convulsions and even death.

Therefore, based on this case, it is important to be cognizant of ingestion of plants, either for food consumption or herbal medicine purposes as there is still much that we need to learn about plant species, their chemistry and metabolic profile.

Conclusion

Plant intoxication has long been a concern, with limited information and knowledge. This case report study demonstrates that there may be other plant families that may also cause similar symptoms. Our patients consumed the Dodder plant, a new component of their dish, before presenting with symptoms of anticholinergic syndrome.

Dodder, a parasitic plant, which grows on various host plants, when ingested may cause anticholinergic syndromes. These cases have been observed in equine populations, and now we describe similar presentations in human subjects, suggesting that we should be aware of its potential effects in humans.



Golden Dodder



Cuscuta japonica



Chapparal Dodder

Acknowledgements

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