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POISONING AFTER INGESTION OF *SPARTIUM JUNCEUM* SEEDS: DOSE-DEPENDENT EFFECTS IN THREE BOYS

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Abstract—Background: Spanish broom (*Spartium junceum* L.) is an ornamental, medicinal, and potentially poisonous plant. **Case Report:** Three children, aged 5–6 years, were accidentally poisoned from ingesting a variable number of seeds of Spanish broom. This plant contains several quinolizidine alkaloids as cytisine, which act as an agonist of nicotinic acetylcholine receptors. The potential danger varies, depending on the dose. After having ingested one to two seeds, one of the boys was asymptomatic. A second boy ingested four to five seeds and presented some digestive problems with favorable clinical evolution. A third boy ingested seven to eight seeds, and presented with digestive and neurologic symptoms, as well as minor metabolic acidosis. In this case there was vomiting with remains of the seeds. He responded well to a gastric lavage and activated charcoal. He was discharged 24 h post ingestion. The intake within one to eight seeds was accompanied by moderate symptoms, with good response to treatment. Children poisoned by plants with nicotine-like symptomatology usually fully recover, but some fatal cases have been reported. Prevention is always a key aspect to consider so as to reduce the risk of poisoning. There is a lack of legislative measures, based on lists provided by experts, to regulate real

or potentially poisonous plants in children's areas. **Why Should an Emergency Physician Be Aware of This?:** This case serves as an example of accidental plant poisoning. For emergency physicians, it is usually complicated to identify the specific plant involved, so initial treatment often starts with basic measures (airway, breathing, and circulation). © 2017 Elsevier Inc. All rights reserved.

Keywords—plant poisoning; *Spartium junceum*; alkaloids; quinolizidines; nicotinic receptors; preschool child

INTRODUCTION

Spanish broom (*Spartium junceum* L.), a species in the family Fabaceae, is an ornamental, medicinal, and potentially poisonous plant native to southern Europe and the Mediterranean area. Considered an invasive species, it has spread around the world. Typically, *S. junceum* is a 2- to 4-meter deciduous shrub with erect green broom-like shoots bearing yellow large flowers (20–25 mm); in late summer, legumes 80–100 mm long mature and contain numerous small dark seeds (Supplementary Figure 1). In general, it is more known as an ornamental plant with medicinal properties than a poisonous one. The whole plant is considered harmful, due mainly to the presence of various quinolizidine alkaloids such as cytisine, sparteine, and isosparteine.

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Smaller quantities of other toxic agents (saponins and lectins, for example) have also been described. Accidental exposure to *S. junceum* is not uncommon and occurs in children, adolescents, and adults (1–6). As with other wild or garden plants, children constitute the group at higher risk of poisoning (7). Here we report three simultaneous cases involving young boys that ingested a different number of seeds of Spanish broom.

CASE REPORT

Two boys aged 5–6 years were admitted in the Emergency Department (ED) for pediatric patients in a Catalan (Northeast Spain) Hospital 2 h after the ingestion of *S. junceum* seeds, and a third boy 4 h post ingestion. Children are at particular risk, as the plants, commonly grown as ornamental garden shrubs, were located in the playground of their school. The children were attracted to

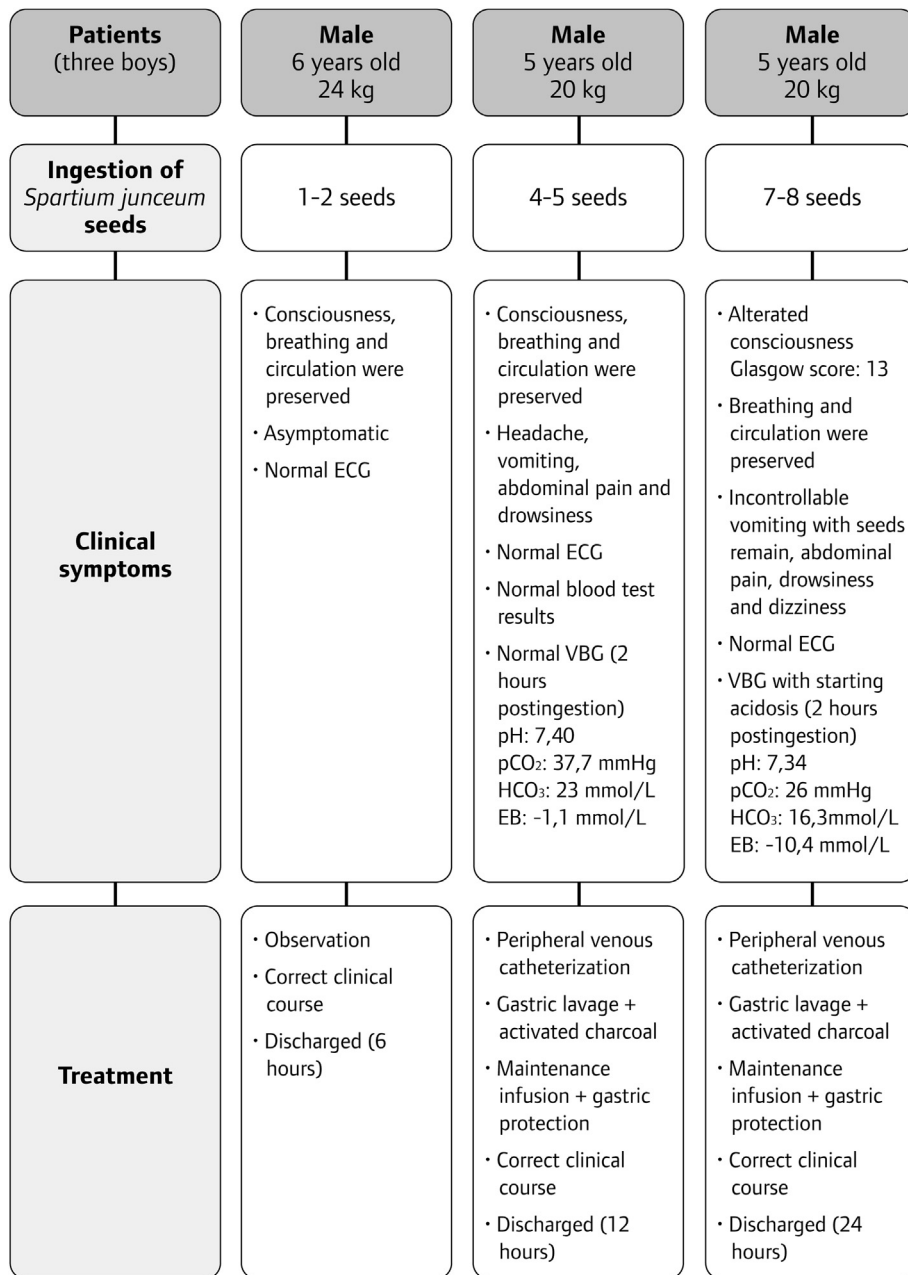


Figure 1. *Spartium junceum* poisoning in three children: seed number, clinical symptoms and treatment. ECG = electrocardiography; VBG = venous blood gas.

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