ANTICHOLINERGIC INTOXICATION DUE TO DATURA STRAMONIUM: THREE PEDIATRIC CASES

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Summary
Anthicholinergic plants contain a variety of alkaloids and have been used for herbal medicine and abused by adolescents. We present three children (two of them were 5 and 7-years-old sister and brother and other was 5-years-old girl), who had applied to emergency room by parents, suspected due to self poisoning by Datura stramonium. Goal of this report is remembering the importance of evaluation and treatment of patients who suspected intoxication, and applied to emergency room with altered mental status and/or unconsciousness, also toxicities and potential risks of different kinds of plants. We also pointed to importance of protecting and educating of children, adolescents, and their parents against to abuse or accidentally use of these kinds of plants.

Key words: Datura stramonium, Pediatrics, Anticholinergic, Intoxication.

Introduction
Datura stramonium (DS) is a wild growing plant, which can cause serious illness or death, due to mild to severe toxicity. DS plant also known as Jimson weed, thorn apple, angel’s trumpet, and Jamestown. It contains a variety of alkaloids including atropine, hyoscamine and scopolamine that can all cause anticholinergic poisoning (1,2,3,4,5). All parts of the DS plant are poisonous and highest concentrations of anticholinergic occurs in the seed (equivalent to 0.1mg of atropine per seed) (1). The estimated lethal doses of atropine and scopolamine in adults are greater than or equal to 10mg and greater than 2-4mg, respectively (1,2). We present unusual case of DS intoxication in three pediatric patients who initially presented with altered mental status, abnormal/incoherent speech, and sleepy when applied to emergency room (ER) by parents. Goal of this report is remembering the importance of taking history in physical examination, toxicities and potential risks of different kinds of plants. Also protecting and educating of children and adolescents against to use of these plants.

Case Report
Case 1 and 2
Five and 7-years-old sister and brother were admitted to ER because of acute loss of consciousness. Their parents reported that they had found them at home in the saloon. Both of them were incoherent, difficult speech and sleepy. They have lost their consciousness then awoke for a few
Case 3
Five-years-old girl was admitted to ER because of acute loss of consciousness. Her mother reported that she might have eaten some strange plants nearly 10 hours before. The patient was monitorised and oxygenized from 4-6 lit/min with face masks and accessed vessel way with 22G branules antecubitally for each one. Vital signs, such as heart rate, arterial pressure, respiratory rate, body temperature, and oxygen saturation measured with pulse oxymeter (from finger probe) were normal. Glasgow coma scores were 13 (E3M6V4) and pupils were bilaterally mydriatic and light reactions were normal for both. Their skins, oral mucosa and faces were dry and flushed. Electrocardiograms showed no abnormalities. There is no lateralizing neurological deficit and Babinski signs were negative for each patient, but there was a decrease in bowel sounds which were quite soft sounds, moreover non-distended abdomen was revealed for two children.

As measured by emergency unit, serum glucose level: 179 mg/dl, white blood cells: 18300/mm3 (%94 neu), blood urine nitrogen: 72 mg/dl, creatinin: 0.8 mg/dl and urine density were 1033 for case 1 and serum glucose level: 209 mg/dl, white blood cells: 23600/mm3 (%92 neu), blood urine nitrogen: 82 mg/dl, creatinin: 0.9 mg/dl and urine density were 1030 for case 2. Other initially laboratory tests for electrolyte disorders or hepatic failure and arterial blood gases were normal for case 1 and 2. We suspected; these signs and symptoms could be due to anticholinergic intoxication. But, what was the cause of these? Furthermore, resuscitation was carried out with crystalloid for prerenal failure and replaced nasogastric tube, for gastric decompression, lavage, and active charcoal administration (two times between 12 hours, 1g/kg via nasogastric tube). The physical examination was otherwise normal. Patient admitted to pediatric intensive care unite and discharged 2 days later to be healthy.

Discussion
Datura stramonium is a plant distributed throughout most parts of temperate regions of the world. According to the recent classifications, it has four varieties, which had been considered for years by many botanists to be different species [D. stramonium var. stramonium L., D. stramonium var. tatula L. (by Torr.), D. stramonium var. inermis (by Jacq. Timmerman) and D. stramonium var. godronii (by Danert)].

Typical clinical symptoms of DS intoxication are as classic atropine intoxication, which are dry mucous membranes, thirsty, difficult swallowing and speaking, blurred vision, and photophobia in initially, may be followed by hyperthermia, ataxia, impaired short-term memory, disorientation, confusion, hallucinations (visual and auditory), psychosis, agitated delirium, coma, seizure, respiratory failure, and cardiovascular collapse. Symptoms of DS toxicity usually occur within 30-60 minutes after ingestion and may continue for 24-48 hours because the alkaloids delay gastrointestinal motility. In our cases, signs and symptoms onset and progress periods and differences were similar with the literature. Como or altered mental status from exogenous poisons or drugs is a common diagnostic problem, not only because of the variety of clinical symptoms but also because of incomplete medical histories and misguided efforts by families and friends to conceal facts. Even if particular toxic agent is suspected, results of a chemical analysis may arrive too late. Therefore, an accurate and immediate
initial dose is 0.5 to 2.0 mg i.v. over 5 minutes. The uncontrollable agitation, and coma with respiratory dysrhythmias unresponsive to conventional therapy, anticolinergic signs, seizures and hemodinamically unstable indications for its use include the presence of peripheral enterohepatic circulation intestinal motility and may reabsorption of toxic agent via in the stomach for prolong periods ingestion, because of anticholinergic agents may remain important and recommended up to 12 to 24 hour after Gastric lavage and activated charcoal administration were protocols without physostigmine for these cases to. Treatment consist of conservative, supportive care [protecting ABC’s, cardiac monitoring, i.v. line, gastrointestinal decontamination (i.e., gastric lavage, emesis and/or activated charcoal)], and physostigmine in severe cases. We were intervened the same treatment protocols without physostigmine for these cases to. Gastric lavage and activated charcoal charcoal administration were important and recommended up to 12 to 24 hour after ingestion, because of anticholinergic agents may remain in the stomach for prolong periods, also delayed gastro-intestinal motility and may reabsorption of toxic agent via enterohepatic circulation. We must point that when decided to administration gastric lavage and/or activated charcoal to unconsciousness patient, airway must be protected, because of aspiration risk contrary to our cases. We did not find any indication for using physostigmine in our cases. Phystostigmine is a tertiary ammonium compound that is a reversible acetylcholinesterase inhibitor that crosses the blood-brain barrier and reverses both central and periferral anticholinergic effects. The indications for its use include the presence of peripheral anticolinergic signs, seizures and hemodynamically unstable dysrythmias unresponsive to conventional therapy, uncontrollable agitation, and coma with respiratory depression, malign hypertension, or hypotension. The initial dose is 0.5 to 2.0 mg i.v. over 5 minutes. The minimal effective dose should be used. Repeated doses may be necessary. It’s contraindicated in patients with cardiovascular disease, bronchospasm, intestinal obstruction, heart block, peripheral vascular disease, and bladder obstruction. Unlike other countries, hallucinogenic, euphoric and other anticholinergic effects of DS are not well known in Turkey. It has been reported only two times in our country before. Poisoning associated with DS or other plants can be prevented through educational programs by press and/or visual media, postgraduate education of health care providers and broadcast reports to the public that emphasize the health hazards of DS ingestion. Also a poison control and information center must be on duty 24 hours-365 days in any country.

Conclusion
These unusual case presentations should remind the importance of toxicities and potential risks of different kinds of plants, also protection and education of children and adolescents and their parents against to abuse or accidentally use of these. We emphasize the importance of accurate history taking, evaluating, and treating the patients which come to ER with suspicious of intoxication, presenting with altered mental status, agitation, hallucinations and other anticolinergic signs and symptoms.

References