A Case of Risperidone Overdose in a 4-Year-Old Boy

To the Editor: In children and adolescents, second-generation antipsychotics (SGAs) have been widely used for psychotic disorders and a wide range of nonpsychotic disorders. Several SGAs have received regulatory approval for some pediatric indications in various countries.[1] Risperidone has been reported to be the most frequently prescribed SGA in children.[2] It is frequently used for disruptive disorders in this patient population.[2] Pediatric antipsychotic exposure can result in significant poisoning; however, in most cases, only minor or moderate symptoms occur and are followed by complete recovery.[3] Herein, we report the case of a 4-year-old child who unintentionally ingested a high dose of risperidone and developed a severe acute dystonic reaction that resolved with biperiden.

Case report. A 4-year-old boy was brought to the emergency service for carpopedal spasm in his right hand. His father said the boy was being treated for oppositional defiant disorder for 45 days with 0.5 cm^3/d of risperidone (1 mg/mL oral suspension). His parents had given the suspension with an injector as described by the prescribing clinician. One day ago, the parents lost the injector, so they tried to determine the proper dosage by using a tablespoon. The boy's father administered 1 full tablespoon of risperidone suspension (a tablespoon contains approximately 15 cm^3 per 15 mg of liquid). Twenty hours after taking the drug, the child developed spasms of his right hand and wrist.

At admission, the boy's blood pressure was 130/90 mm Hg, and he was tachycardic (133 beats/min). His body temperature was 36.5°C (97.7°F). Results from the boy's laboratory tests (hemogram, routine biochemistry, urine toxicologic test, and urinalysis) were within normal limits. During monitoring in the emergency service, 1 hour after admission, the child developed opisthotonus posture and slurred speech. In the physical examination, extrapyramidal symptoms (EPS) were noted, specifically, cogwheeling signs and rigidity of his right cubital joint. We administrated biperiden 2.5 mg intramuscularly. An hour and a half later, his general condition improved and his rigidity also recovered. Appropriate advice was given to the parents (including use of the injector for dose adjustment as described by the doctor), and the boy was discharged with outpatient follow-up.

Although the incidence of EPS associated with therapeutic risperidone use is low, its occurrence following overdose is less clearly defined.[4] To the best of our knowledge, our report represents the highest dose (15 mg) of acute risperidone ingestion in a child. Our patient developed severe EPS that resolved with an anticholinergic agent (ie, biperiden). Serious side effects of risperidone in children can be observed in younger populations.[5] Extrapyramidal symptoms, in particular, appear to be more problematic in children.[6] Two cases have been reported[4,7] about risperidone poisoning in children. The reported patients experienced significant adverse effects, including EPS, that lasted for 2 to 3 days.[4,7] One of these cases was a 3-year-old child[4] who ingested risperidone 4 mg (0.27 mg/kg) and developed slurred speech, jittery movements, restlessness, eye deviation, and tachycardia. His EPS continued for approximately 3 days, and he subsequently recovered with oral diphenhydramine.[4] Our patient is the first case of risperidone-induced opisthotonus. According to our case report, we propose that higher doses of risperidone are associated with more severe EPS.

The main features of acute risperidone toxicity are reported to be tachycardia and dystonic reactions.[8] Significant cardiac and other neurologic features seem to be uncommon.[8] Symptomatic patients should be monitored for central nervous system depression, and an electrocardiogram should be obtained.[3] Our patient presented with relatively mild symptoms (carpopedal spasm) and subsequently developed more severe EPS (opisthotonus). Thus, close and continuous monitoring of the child is of importance in risperidone poisoning. Twelve hours of observation is recommended for children who have extrapyramidal symptoms.[4] Our patient responded very well to biperiden, although diphenhydramine was also shown to be effective in risperidone-induced EPS in children.[4]

Unintentional ingestion of high doses of risperidone can cause significant side effects, which include severe extrapyramidal symptoms in children; these conditions may resolve with an anticholinergic agent. Overdose management includes close, continuous monitoring and treatment with biperiden or diphenhydramine.

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Potential conflicts of interest: None reported.

Funding/support: None reported.

Published online: March 10, 2016.

Prim Care Companion CNS Disord 2016;18(2):doi:10.4088/PCC.15l01855