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Selected Topics: Toxicology

PROGRESSIVE ORGAN FAILURE AFTER INGESTION OF WILD GARLIC JUICE

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□ **Abstract—Background: Wild garlic and related plants are increasingly sought after by fans of natural products. They can be confused with other plants containing colchicine and cause potentially fatal intoxications. Case Report: We report a case of accidental poisoning by *Colchicum autumnale*, which was mistaken for wild garlic (*Allium ursinum*). The patient initially presented with mild gastrointestinal symptoms, but progressed rapidly to agranulocytosis, paraparesis, and delirium before the causative agent was identified. The laboratory tests revealed rhabdomyolysis, coagulopathy, alteration of liver tests, and prerenal azotemia. Botanical examination confirmed the incriminated plant (*Colchicum autumnale*). Serum and urine analysis confirmed the presence of colchicine. The patient required intensive support therapy, and she fully recovered within 8 weeks. Why Should an Emergency Physician Be Aware of This?: Colchicine poisoning should be considered in the differential diagnosis of patients presenting with gastroenteritis after ingestion of wild garlic.** © **2015 Elsevier Inc.**

□ **Keywords—accidental intoxication; colchicine; *Colchicum autumnale*; wild garlic; *Allium ursinum***

INTRODUCTION

Autumn crocus (*Colchicum autumnale*) and wild garlic (*Allium ursinum*) are common in Europe and have very similar leaves that can easily be mistaken during a non-blooming period. In North America, *Allium tricoccum* looks like the European wild garlic, thrives in the eastern part of the United States, and is also sought by amateurs of natural products. *C. autumnale* (or autumn crocus), although not native to the United States, has been introduced and can also be found in the wild, in the eastern part of the United States, Oregon, and Utah (1). The *Gloriosa superba* (glory lily) is sometimes grown as a house ornamental plant, but also thrives in the southeastern part of the United States and Hawaii. Although wild garlic is a harmless plant, the autumn crocus and the glory lily contain the alkaloid colchicine, which is highly toxic by oral ingestion. It is critical to be aware that wild garlic, autumn crocus, and glory lily can be confused. We present here a case of acute poisoning by autumn crocus, and highlight therapeutic approaches.

CASE REPORT

A 45-year-old woman presented to a local hospital, on a Monday in late February, with a history of general weakness, nausea, vomiting, and watery stools. The patient had been in good health and had no medical treatment. She and her husband had eaten rice, squid, and spring rolls 2 days prior. The following morning at 9 a.m., they both drank a wild garlic juice, a drink they consumed regularly, made from plants gathered in the vicinity by the husband. The patient swallowed a whole glass of juice (7 fl. oz.), whereas the husband drank a smaller amount

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because he did not like the taste. They denied any consumption of mushrooms. Both had the same symptoms, beginning at about 11 a.m. (Day 0 = D0), but the wife's were much more pronounced.

On admission, 24 h later (D1), the patient was afebrile, in poor condition; blood pressure was 124/80 mm Hg, heart rate 81 beats/min, respiratory rate 35 breaths/min, and O_2 saturation 93% (FiO_2 30%). General tenderness of the abdomen was noted, without abdominal guarding. Cardiopulmonary auscultation was normal. Pupils had equal size and were reactive to light. Skin examination was normal. Electrocardiogram (ECG) was unremarkable. Blood gas showed metabolic acidosis (pH 7.35, bicarbonate 17 mmol/L, PCO_2 3.4 kPa, and lactate 1.7 mmol/L). Blood analysis showed a leukocytosis, a slight alteration of liver tests (low prothrombin time, elevated aspartate aminotransferase/alanine aminotransferase), a prerenal azotemia, an elevated C-reactive protein, and hypocalcemia (later, hypophosphoremia; see Table 1). After verification, wild garlic was confirmed to be devoid of toxicity. The initial clinical presentation was suggestive of a bacterial gastroenteritis that was empirically treated with intravenous antibiotics (ceftriaxone and clarithromycin to cover the most common enteric pathogens, including *Campylobacter*), intravenous fluids, and antiemetics. The husband was treated as an outpatient with ciprofloxacin and clarithromycin.

The patient rapidly deteriorated (D2), with the development of confusion, muscle pain, and proximal paraparesis. A thoracoabdominal computed tomography (CT) scan showed diffuse enterocolitis. Stool cultures were negative for *Salmonella*, *Shigella*, *Campylobacter jejuni*, and *Clostridium difficile* (stool culture and toxin). From D2 to D4, renal function normalized, but the patient developed pancytopenia, hyperferritinemia, rhabdomyolysis, and elevated transaminases. Blood cultures were sterile and serologies (Epstein-Barr virus, human immunodeficiency virus, parvovirus B19) were negative. She was then transferred on D5 to the Emergency Department of our university hospital with a presumptive diagnosis of hemophagocytic syndrome, a rare disorder, for further investigation and treatment.

Upon admission, a peripheral blood smear examination revealed a defect in neutrophil segmentation with a large majority of unsegmented forms of reduced size; the bone marrow was hypocellular, with a strong left shift in the granulocytic lineage and a reduced erythrocytic lineage. Hemophagocytosis was not present, and a hemophagocytic syndrome was ruled out (2). Other elements were atypical for this diagnosis, such as delirium, paraparesis, rhabdomyolysis, hypocalcemia, and hypophosphoremia. At this stage, further research revealed that although wild garlic is harmless, it could be confused with colchicum or *Convallaria majuscula* and *majalis*

Table 1. Laboratory Values

Day	Leukocytes (4–10 × 103/μL)	Hemoglobin (11.7–15.7 g/dL)	Platelets (150–350 × 103/μL)	INR	Creatinine (0.50–0.90 mg/dL)	Potassium (3.5–5.0 mmol/L)	Ionized Calcemia (4.7–5.3 mg/dL)	Phosphorus (2.5–4.3 mg/dL)	AST (9–32 U/L)	ALT (9–36 U/L)	C-Reactive Protein (<10 mg/L)	Creatine Kinase (25–140 U/L)	Ferritin (10–160 ng/mL)
D1	41	183	288	1.6	1.12	4.7	3.36		234	53	94		
D2	31.6	153	155	2.1	2.47	4	3.36		341	58	290	1637	
D3	15.6	150	76	1.3									
D4	8.5	140	34	1	0.7	3.9	3.64		755	113	232	22180	22018
D5	0.9	104	14	1.1	0.57	4	3.76	1.0	847	234	122	21821	
D6	0.9	78	10	1	0.54	3.7	3.96	2.6	718	477	46	10843	3497
D7	3.7	77	21	1.1	0.44	4.6	5.12	2.5	493	533	78	3154	1332
D8	15	86	52	1.1	0.71	5.4	4.56	2.9	991	391	104	991	940
D9	32.9	85	94	1.1	0.67	4.4	4.52	4.2	574	286	163	574	
D10	49.8	84	105	1	0.63	4.3	4.36	2.3	81	193	126	700	
D11	48.8	83	115	1	0.53	4.6	3.48	2.4	68	145	77	532	
D12	40.7	82	138	1	0.43	4.3	4.16	3.2	73	140	44	459	
D13	28.7	85	178	1.1	0.45	4.3		2.9	105	169	32	376	
D14	17.8	83	231	1.1	0.46			3.1	127	215	29	206	

AST = aspartate aminotransferase; ALT = alanine aminotransferase; INR = international normalized ratio.