An unusual gastric biopsy

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Dear Editor,

Traditional medicinal herbs that grow in the wild are associated with numerous potential hazards; thus, they are not widely recognized clinically. However, the perception of the hazards of these herbs among the general population remains minimal. The widespread prescription of traditional medicine by unqualified personnel has been documented, which could lead to fatal scenarios, resulting in morbidity and death (1).

A 54-year-old male patient with rheumatoid arthritis since 8 years underwent specific therapy. At the time of hospitalization, he complained of weakness, tachycardia, and pain in the epigastric area, which appeared after ingestion, along with vomiting with few traces of brown blood and diarrhea. General blood analysis revealed anemia, thrombocytopenia and leukopenia. Esophagogastroduodenoscopy revealed multiple acute erosions in the stomach (Figure 1). Five biopsy samples were obtained from areas near these erosions. Histopathological examination of gastric biopsy revealed absence of any changes in the architecture of the stomach mucosa at low magnification (Figure 2A). However, examination at high magnifications revealed a presence of large numbers of mitotic figures (>10 in one HPF) arrested in the metaphase (Figure 2B) and few apoptotic bodies in glandular cells. The irregular arrangement, loss of polarity, and hyperchromatism of nuclei were also observed. This indicated high-grade dysplasia of stomach mucosa or cancer.

Nevertheless, detailed questioning of the patient revealed that he had been using self-made water tincture of autumn crocus (*Colchicum autumnale* L.) bulbs for treating rheumatoid arthritis at home for 2 weeks. High-performance liquid chromatography using diode-array detection method revealed the presence of colchicine at a dosage of 0.0125 mg/L in his plasma sample. After three weeks of treatment in the hospital, he had completely recovered and was discharged.

Colchicine is an alkaloid that is found in meadow saffron or autumn crocus and the glory lily *(Gloriosa superba)*. It has been recognized as a toxic substance since the late 3rd century BC. In 1820, Pellsiter and Caventou isolated colchicine from colchicum for the first time (1).

The main use of colchicine is as a potent anti-inflammatory agent. Its pharmacokinetics and metabolism rate remained unknown for long, and determination of its plasma concentrations via a radioimmunoassay has recently been performed. Colchicine acts by blocking the assembly and polymerization of microtubules via binding to tubulins (2). Microtubules are made up of αβ-tubulin heterodimers

Figure 1. Acute erosions in the pyloric area of stomach

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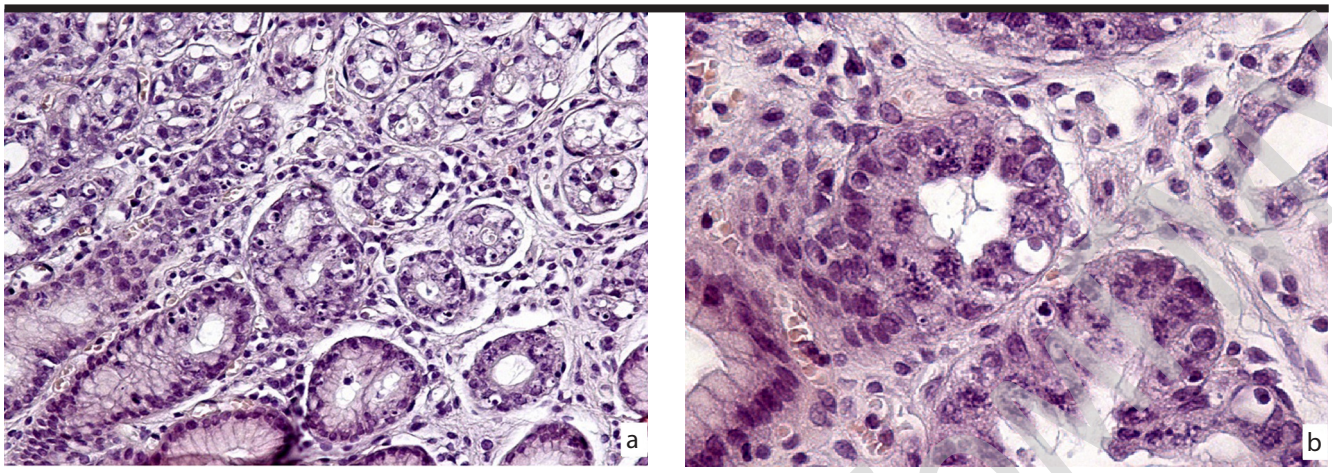

Figure 2. a-b. a) A normal stomach with areas of high mitotic activity. Stain: hematoxylin-eosin. Magnification: 200×; b) A large number of mitotic figures in gastric glands. Stain: hematoxylin-eosin. Magnification: 400×

and are involved in various cellular processes such as intracellular trafficking, cell migration, maintenance of cell shape, cell division, cytokine and chemokine secretion, and regulation of ion channels (3). Colchicine blocks mitotic cells in the metaphase by binding to tubulin to form tubulin-colchicine complexes in a poorly reversible manner. This results in further binding to the ends of microtubules, which ultimately prevents the elongation of the microtubule polymer, thus blocking mitosis. Moreover, colchicine acts differently based on its concentration; for instance, at a low concentration, it halts microtubule growth, and at a high concentration, it promotes microtubule depolymerization (4). Furthermore, it blocks mitosis in the metaphase and G1 phase, thus preventing DNA synthesis, which leads to impaired protein assembly, decreased endocytosis and exocytosis, altered cell morphology, decreased cellular motility, and arrest of mitosis. Such histological changes could resemble high-grade dysplasia in stomach mucosa, as observed in our case; for instance, histopathological examination revealed the presence of numerous mitotic figures (the result of mitotic arrest) and particularly, ring mitoses. These arrested mitotic figures are predominantly confined to the proliferative regions of the gastrointestinal mucosae. An endoscopical picture of gastropathy in cases of colchicine toxicity has often revealed erosions in the stomach and duodenum. According to Danel VC et al., gastrointestinal symptoms are usually observed with colchicine at doses of <0.5 mg/kg (5). The culmination of previously described mechanisms leads to multi-organ dysfunction and failure. The presented case is interesting because it shows a clinical and histopathological picture of chronic stomach injury caused by colchicine appearing after self-treatment by water tincture of autumn crocus.

Poisoning by traditional medicinal drugs is rather rare in clinical practice, but growing interest in traditional medicine worldwide has led to an increased number of cases of intoxications by herb-based self-made remedies in practice, as noted by physicians of different specializations.

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