Aluminum phosphide-induced esophageal stricture: an unusual complication

Aluminum phosphide is a solid fumigant pesticide used for preserving grains. We report here on six cases of aluminum phosphide poisoning presenting as esophageal strictures.

Six patients (three men and three women; mean age 25.3 years, range 12 – 56) ingested tablets of Celphos (aluminum phosphide, weight 3 g, diameter 15 mm) with suicidal intentions (66.6 %) or accidentally (33.3 %). All of the patients vomited out the partially dissolved tablet 15 min later. They were managed with symptomatic treatment. All of the patients had progressive dysphagia for the following 10.5 ± 5.43 days. Barium swallow examinations revealed strictures 0.8 ± 0.22 cm long in the mid-esophagus, with proximal dilation (Figure **1**). Endoscopy showed circumferential ulcerations and strictures at 26.8 ± 3.12 cm (Figure **2**). Biopsies from the ulcers showed infiltration with neutrophils, lymphocytes, and fibroblasts. All of the patients underwent dilation treatment with Savary–Gilliard dilators 6 weeks after ingesting the Celphos tablets, at 2-week intervals. They received 7.66 ± 7.06 dilation sessions. One patient developed a tracheoesophageal fistula [1] during the course of the illness while receiving treatment in the dilation program.

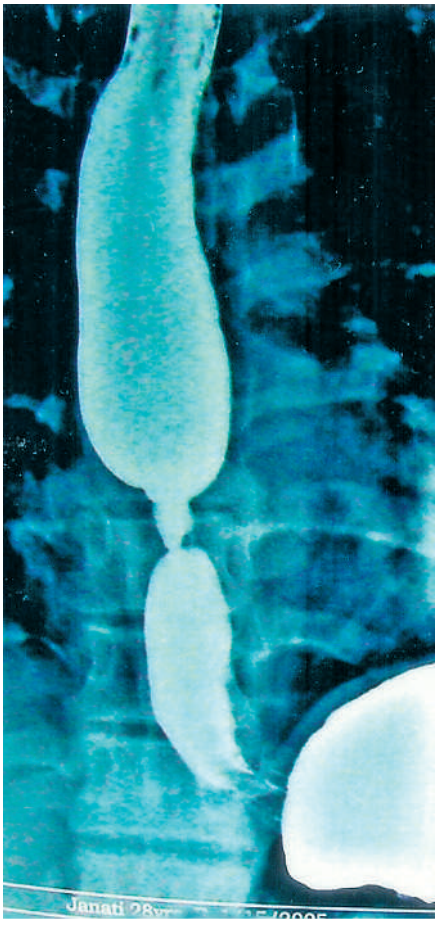

Figure **1** A barium swallow examination, showing a 1-cm long stricture with proximal dilation of the esophagus.

Acute aluminum phosphide poisoning has been associated with a high mortality rate. All of these patients survived because they had ingested previously exposed tablets [2] and vomited the partially dissolved tablets. The tablets did not reach the stomach, where the gastric acid helps to release phosphine.

The mechanism of stricture development may have been adhesion of the tablet at the most narrow portion of the esophagus. Celphos liberates phosphine gas when it comes into contact with a moist surface. Phosphine leads to the inhibition of cytochrome oxidase and catalase [3], leading to hypoxic cell damage, lipid peroxidation [4], and protein denaturation due to the generation of oxygen free radicals. This leads to an inflammatory response, followed by healing with fibrosis. Two patients with esophageal strictures due to aluminum phosphide poisoning have been reported on in the recent literature [5].

Aluminum phosphide ingestion thus causes esophageal stricturing that is resistant to endoscopic dilation.

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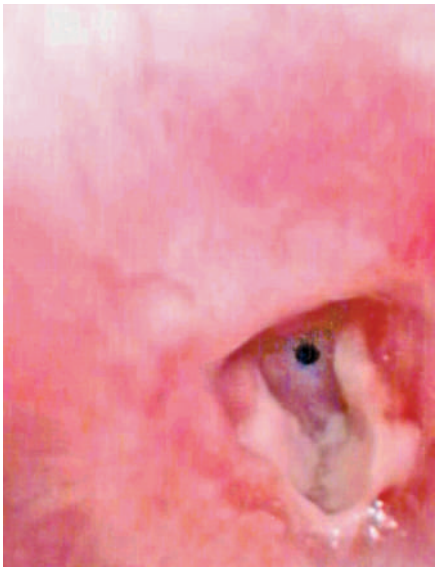

Figure **2** The endoscopic appearance of the esophageal stricture, showing circumferential ulceration with narrowing of the lumen.

References

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