Medical Image of the Week: Acute Pneumonitis Secondary to Boric Acid Exposure

Figure 1. Panel A: A normal baseline chest radiograph obtained a few months prior to the current presentation. Panel B: A chest radiograph obtained at the day of admission with respiratory distress post exposure to boric acid powder that shows diffuse hazy opacities of the lungs. Panel C: Representative image form thoracic computed tomography obtained on day of admission shows extensive diffuse central predominant ground glass opacification. Panel D: A chest radiograph obtained 3 days after large dose of systemic steroid given for a presumptive diagnosis of acute pneumonitis. Rapid improvement of the bilateral airspace disease is suggestive of resolving inflammation.
A 33-year-old man presented with acute severe dyspnea and pleuretic chest pain one day after accidental inhalational exposure to boric acid powder. The patient was spraying boric acid in his apartment to kill bugs and he got trapped in a poorly ventilated area with a cloud of the dusted boric acid for more than a minute. He did not feel any significant symptoms initially. Overnight he started to develop shortness of breath and chest tightness. The patient visited an urgent care where he was reassured due to normal chest radiograph and was given a course of oseltamivir empirically due to a widespread influenza epidemic. After a few hours the patient’s symptoms got much worse and he presented to the emergency department with severe pleuretic chest pain and respiratory distress. The patient required 5 liters of oxygen to keep his saturation above 90%. His chest images showed extensive bilateral airspace disease suggestive of either pulmonary edema, multifocal pneumonia or inflammatory pneumonitis. His microbiologic work up was negative including influenza PCR. Echocardiogram was normal. With his recent exposure to boric acid inhalation an acute chemical pneumonitis was suspected. The patient received systemic high dose prednisone for 3 days and he improved significantly clinically and on imaging. His oxygen saturation was 97% on room air 4 days post admission.

Boric acid is an odorless partially water-soluble antiseptic, insecticide, flame retardant, neutron absorber, and a precursor to other chemical compounds (1,2). The material safety data sheet for boric acid suggests that it may be also toxic to kidneys, cardiovascular system, central nervous system (CNS) (2). Repeated or prolonged exposure to the substance can produce target organ damage (1,2)

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References