

CASE REPORT

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Homicidal Asphyxia by Pepper Aspiration

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ABSTRACT: As punishment for lying, the foster mother of a five-year-old white male poured pepper into his throat. He immediately became dyspneic, then apneic, and was pronounced dead about 1 h later. At autopsy, the main stem and several smaller bronchi were occluded with pepper. Mechanisms of asphyxia by pepper include mechanical obstruction of the tracheobronchial tree and mucosal edema caused by the irritant effect of volatile oils in pepper. This rare circumstance represents the second reported fatal case of pepper aspiration and the third reported case overall.

KEYWORDS: pathology and biology, asphyxia, pepper, homicide

Fatal aspiration of pepper is a rare event. Only two cases of pepper aspiration have been reported. Adelson reported a homicide in which the mother of a three-and-one-half-year-old girl, to punish her for taking a nursing bottle away from an infant sibling, removed the lid from the shaker and poured pepper into the child's mouth [1]. In the second case, a nonfatal accident, a two-and-one-half-month-old girl was taken to an emergency room for dyspnea 30 min after having poured an unknown quantity of pepper into her mouth. She required a tracheostomy, ventilatory assistance, tracheobronchial lavage, and steroid treatment. She was discharged in good health two days later [2]. Reported herein is a third case of pepper aspiration, the second case resulting from homicide.

History and Autopsy Findings

This five-year-old white male was being disciplined for lying. His foster mother stated that she meant to shake a few grains of pepper onto his tongue. She removed the cap of the pepper shaker, and as she had the container poised above his mouth, he allegedly struck her arm with his, causing a large bolus of pepper to go into his mouth. He became rapidly dyspneic, and 5 min after the incident, emergency medical personnel observed him to take a few breaths and become apneic. On laryngoscopic examination, clumps of pepper and mucus were seen. A tracheostomy was performed. The trachea was found to be obstructed with masses of admixed pepper and mucus. Upon arrival to an emergency room he was pulseless and apneic, and he was pronounced dead about 1 h after the inhalation of the pepper.

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At autopsy, approximately 3 mL of pepper was impacted into the right and left main stem bronchi and extended into lobar and segmental bronchi (Fig. 1). About 1 mL of additional pepper was entrapped within tightly adherent mucus. Individual grains and clumps of pepper were in the larynx and trachea. The right and left lungs weighed 210 and 180 g, respectively, and exuded frothy edema material on cut section. Grains and clumps of pepper were present in the esophagus, an estimated 2 mL were admixed with the stomach contents, and approximately 4 mL were present in the chyme in the duodenum and jejunum. An additional 0.75 mL had been suctioned antemortem and was available for examination with the body.

In microscopic sections of the lungs, the pepper appeared as granules of organic material within bronchi (Fig. 2). The granules ranged from 600 μm (0.60 mm) to 1100 μm (1.10 mm) in greatest dimension with a mean diameter of 690 μm (0.69 mm). Some of the grains contained a variable amount of black pigment, while the remainder were eosinophilic and birefringent. Luminal mucus with entrapped mucosal and inflammatory cells was present within bronchi.

Discussion

In summary, this is the third reported case of pepper aspiration and the second reported fatal case. As in Adelson's report [1], the victim was a young child forcibly given pepper for punishment. In both instances, the assailant removed the lid of the pepper shaker, a curious maneuver if the administration of pepper is merely intended to be punitive. In both cases the mechanism of death was airway occlusion by pepper. The child and siblings in Adelson's case had been abused multiple times, while this was the first instance of abuse in the case reported herein. In the nonfatal case reported by Flintoff and Poushter [2], the patient was a



FIG. 1—The larynx, trachea, and mainstem bronchi were filled with pepper.

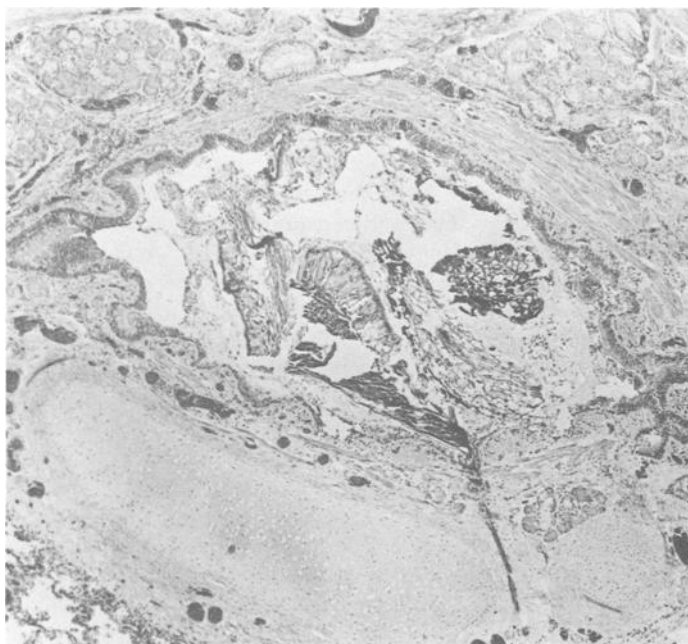


FIG. 2—Segmental bronchus with intraluminal pepper with mucus. Hematoxylin and eosin (original magnification $\times 25$).

21-month-old infant who poured pepper into her own mouth and was taken to an emergency room 30 min later. No other evidence of abuse was mentioned in the report, but the extent of the investigation into possible child abuse is not reported.

The mechanism of death in the two fatal cases was mechanical airway obstruction. With lesser amounts of pepper, mucosal edema of the upper airway is a potential mechanism of delayed death. A constituent of black pepper is a volatile oil containing 5 to 9% piperine. Volatile oils are a severe irritant to mucous membranes [2]. Flintoff and Poushter ascribe their nearly fatal case of pepper aspiration to the pepper-induced mucous membrane swelling. The successful treatment protocol in their case was the same used in cases of respiratory tract burns.

The other powdery or granular substance implicated in fatal and near-fatal asphyxia is talc, the constituent of baby powder. Of the 24 reported patients, 20 have been 2 years of age or younger, and 5 (20%) have died [3]. There is characteristically a clinically silent period between aspiration and the onset of respiratory distress [4]. In an autopsied case, small bronchi, bronchioles, and occasionally respiratory bronchioles and alveoli, were occluded by birefringent granules measuring from 2 to 50 μm in length and 1 to 10 μm in width.

Microscopically, pepper grains are also birefringent, irregular, and much larger, averaging 690 μm in maximum diameter. They tend to lodge in larger airways. Obstructive symptoms occurred immediately in the two fatal cases of pepper aspiration which involved large doses, while there is usually an initial asymptomatic phase in talc inhalation. Where history was available, the talc aspiration cases appeared accidental, sometimes a result of a sibling pouring the powder into the infant's mouth. In other instances the talc was self-administered [5]. Two of the three reported pepper aspiration cases were homicides.

The manner of death in this case is felt to be homicide because of the disparity of the stated intent (to shake "a few grains" of pepper onto the tongue) and the actions (removal of

the lid of the pepper shaker). Furthermore, the fact that the assailant was a foster mother suggests that she should have exercised better judgment in her method of the punishment and should have been aware of the potential consequences of her actions.

This case fulfills the criteria for involuntary manslaughter. Central to the definition of involuntary manslaughter is the concept of gross negligence. Gross negligence is the "willful, wanton and reckless disregard of the consequences which might follow from a failure to act and indifference to the rights of others." To prove gross negligence one must prove beyond a reasonable doubt that (1) "this was a situation requiring ordinary care and diligence to avoid injuring another," (2) "the defendant had the ability to avoid harm to another by exercise of such ordinary care," and (3) "that the defendant failed to use such care and diligence to prevent the threatened danger when, to the ordinary mind, it must have been apparent that the result was likely to cause serious harm to another" [6].

A coroner's inquest was held, and the jury found the defendant's conduct to be "negligent but lawful." The prosecutor, committed to following the jury's decision, did not charge the foster mother.

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