H5 A Fatal Case of Candy Aspiration in a Child: Was It a Choking Death?

Giuseppe Davide Albano, MD, Foggia 71121, ITALY; Pasquale Malandrino, MD, University of Catania, Catania 95123, ITALY; Massimiliano Esposito, MD, University of Catania, Catania 95123, ITALY; Aldo Liberto, MD, University of Catania, Catania 95123, ITALY; Dario Condorelli, University of Catania, Catania 95100, ITALY; Monica Salerno, MD, PhD, Department of Forensic Pathology, Foggia 71121, ITALY; Giulio Di Mizio, MD, PhD, Magna Graecia University, Catanzaro 88100, ITALY*

Learning Overview: The goal of this presentation is to describe characteristics, circumstances, radiological, toxicological, and histopathological findings of a singular case of a Foreign Body Aspiration (FBA) death in a child.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by presenting the necessity for a complete methodological and multidisciplinary forensic approach by means of autopsy and histopathological examinations to diagnose an FBA-related death.

FBA is still a significant concern in the pediatric population, accounting for thousands of emergency room visits and more than 150 deaths each year in the United States alone.[1] Mortality rates can be relatively high, with some studies reporting a rate of up to 3.4% among patients admitted for FBA.[2] Depending on the location and the degree of airway obstruction, patients can present with signs and symptoms ranging from a non-specific cough to shortness of breath and stridor. In case of distal localization in the tracheobronchial tree, the most common symptoms are unilateral wheeze and decreased breath sounds.[3] Even a small reduction in the size of airway can cause a significant increase in airway resistance; therefore, the consequences of foreign body inhalation could be dramatic.[4] This report describes characteristics, circumstances, radiological, toxicological, and hystopathological findings of a singular case of an FBA-related death in a child.

This case regards a 7-year-old child who died at home after a licorice candy ingestion. After the candy ingestion, he started coughing and wheezing and immediately turned cyanotic. His mother attempted resuscitative procedures that were unsuccessful and called the emergency services. At arrival, emergency services attempted tracheostomy without success and decided to transport the child to the closest hospital. During transportation, inside the ambulance, death was pronounced. Recent medical history was positive for an airway infection: cough and mucus were present and he had been treated with antibiotics for five days.

A Computed Tomography (CT) total body scan performed prior to autopsy excluded any traumatic lesion as well as the presence of foreign bodies in the upper airways and the main bronchi.

A complete autopsy was performed two days after death. Cervical and thoracic organs were dissected with Gohn's method (*en bloc*). Inside the trachea and main bronchi a brownish dense material and white foam were observed; in the right broncus such material was denser. The trachea and main bronchi walls had no lacerations. Macroscopic examination of the brain and abdominal organs was unremarkable. After fixation, the cervical and thoracic organs bloc was examined. Inside a secondary right broncus, a black, foreign body of hard consistency, which measured 0.5cmx0.4cm, was observed. Histologic examination of all organs was performed using using Hematoxylin-Eosin (H&E). An immunohistochemical staining method of lung samples was performed with CD45 and mast-cells antibodies. H&E-stained lung samples revealed acute emphysema, endoalveolar emorrhagic oedema, as well as thickening of alveolar septa. H&E-stained bronchi and trachea samples revealed thickening of the wall and signs of chronic lymphocytic inflammation. H&E samples of all organs revealed the presence of lymphocytic inflammation. Immunoistochemical staining of lung samples showed a strong positive reaction to CD45 and mast-cells antibodies with signs of degranulation. Routine toxicological analysis was performed and was unremarkable.

In conclusion, the circumstantial data, both macroscopic and microscopic upper airways and lung findings as well as immunoistochemical study, contributed to exclude a chocking death. Cause of death was attributed to an acute respiratory failure due to a bronchospastic reaction after a foreign body aspiration in a child with chronic systemic lymphocytic inflammation.

Reference(s):

1. Centers for Disease Control and Prevention. Nonfatal Choking-Related Episodes Among Children—United States, 2001. *MMWR: Morbidity and Mortality Weekly Report*, 51.42 (2002): 945-948.
2. Sidell, Douglas R. et al. Food Choking Hazards in Children. *International Journal of Pediatric Otorhinolaryngology*, 77.12 (2013): 1940-1946.
3. Gregori, Dario et al. Foreign Bodies in the Upper Airways Causing Complications and Requiring Hospitalization in Children Aged 0–14 Years: Results from the ESFBI Study. *European Archives of Oto-Rhino-Laryngology*, 265.8 (2008): 971-978.
4. Foltran, Francesca et al. Inhaled foreign Bodies in Children: A Global Perspective on Their Epidemiological, Clinical, and Preventive Aspects. *Pediatric Pulmonology*, 48.4 (2013): 344-351.

Foreign Body Aspiration, Asphyxiation, Choking

Copyright 2019 by the AAFS. Permission to reprint, publish, or otherwise reproduce such material in any form other than photocopying must be obtained by the AAFS.