

Content available at: <https://www.ipinnovative.com/open-access-journals>

Indian Journal of Forensic and Community Medicine

Journal homepage: <https://www.ijfcm.org/>

Case Report

Sudden death following aspiration of gastric contents under the influence of alcohol

Sundaragiri Suraj^{1,*}, Chaitanya Mittal², Velupugonda Sudha Sree¹, Sagarika Paaleti¹

¹Dept. of Forensic Medicine and Toxicology, Gandhi Medical College, Secunderabad, Telangana, India

²Dr. B. C. Roy Multi-specialty Medical Research Centre, Indian Institute of Technology, Kharagpur, West Bengal, India



ARTICLE INFO

Article history:

Received 24-11-2022

Accepted 10-12-2022

Available online 09-01-2023

Keywords:

Autopsy

Sudden death

Asphyxia

Aspiration

Gastric contents

ABSTRACT

Aspiration of foreign bodies, stomach contents, food material into the airways and lungs can cause sudden death and a wide spectrum of pulmonary disorders with various presentations. Sudden deaths often occur in such subjects under the alcohol intoxication with no injuries. In such deaths with no associated causes, meticulous autopsy with chemical analysis and histopathology of lung plays a significant role in opining regarding the cause of death. We report here such a case of aspiration of gastric contents under the influence of alcohol.

This is an Open Access (OA) journal, and articles are distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License](https://creativecommons.org/licenses/by-nc-sa/4.0/), which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprint@ipinnovative.com

1. Introduction

Aspiration is inhalation of gastric or oropharyngeal contents into the larynx and lower respiratory tract.¹ Aspiration of foreign bodies, food material and stomach contents can be observed in a wide range of accidental deaths and deaths from natural causes. In these cases, gastric contents are commonly found in the larynx, trachea and bronchi at autopsy.^{2,3} Aspiration pneumonia are encountered in any age, from infancy to the elderly aged. However, specific are more likely to be encountered in certain age groups where risk factors for aspiration exist. For instance, aspiration of foreign body is encountered mostly in younger children and the elders, particularly those with impaired mechanism of swallowing or mental status. Aspiration pneumonia is a relatively common form of pneumonia in the elderly with chronic medical disorders and in those residing in nursing homes. It typically occurs in the subjects with depressed consciousness from drug overdose, alcohol intoxication or

general anesthesia, thus predisposing to the regurgitation and aspiration of a large amount of gastric contents.⁴ We report here such a case of aspiration of gastric contents under the influence of alcohol.

2. Case Description

Thirty two years aged male victim returned home after consumption of food and alcohol outside, and informed his parents that he had to go to bathroom. As his son has not returned even after long time, they got suspicion and went to check and called his name. As there was no reply, they broke the bathroom door and unfortunately found their son lying on the floor. Based on the circumstances of death, the investigation officer conducted an inquest and issued requisition for conducting autopsy on the dead body of the deceased.

Autopsy revealed contusion of scalp of size 1cm x 1cm on the mid-occipital region, 4cms x 2cms on right temporal region and 4cms x 2 cms on anterior occipital region on left side. Patchy subarachnoid haemorrhage of size 1cm x 2cms and 2cms x 2 cms was noted on right and left parietal

* Corresponding author.

E-mail address: drsurajfm@gmail.com (S. Suraj).

lobes respectively. All organs were found congested. About 200 cc of yellow partially digested food particles with fluid with gastric mucosal congestion and emission of peculiar odour was observed.(Fig. 1) The larynx, trachea, bronchi, and the bronchioli were coated with yellow food particles and frothy fluid material similar to the gastric contents. (Fig. 2) The lungs, which were markedly inflated, congested, edematous, and heavy expressing of similar material from main bronchus on compression of both lungs.(Fig. 3) Stomach and small intestines with contents, piece of liver and kidney and blood were preserved in bottle containing saturated solution of sodium chloride as preservative and sent to state forensic science laboratories for chemical analysis. Opinion regarding the cause of death was reserved pending for report of chemical analysis. The samples analysed by chemical tests including thin-layer chromatography for volatile poisons, corrosive poisons, metallic poisons, drugs and insecticides at state forensic science laboratories revealed presence of ethyl alcohol. The final opinion regarding the cause of death was opined as ‘aspiration of gastric contents under the influence of alcohol.



Fig. 1: Gastric contents with yellow partially digested food particles with fluid

3. Discussion

The nature and quantity of the aspirated material, the host’s chronicity and responses determines the type of aspiration syndrome. Aspiration is mostly noticed in subjects suffering from various risk factors like compromised airway defenses (eg, endotracheal intubation, vocal cord paralysis),⁴ depressed consciousness (eg, anesthesia, sedation, drug overdose, drug abuse, alcohol intoxication),⁴⁻⁷ dysphagia in altered upper aerodigestive tract (eg, cancer, radiation therapy, prior surgery),^{4,5} dysphagia in neurologic disorders (eg, stroke, dementia, parkinson’s disease, schizophrenia, multiple sclerosis, alzheimer’s disease with severe dementia)⁴⁻⁹ dysphagia in esophageal diseases (eg. tracheoesophageal fistula, motility disorders),^{4,5} gastroesophageal reflux disease and recurrent vomiting.⁴ Aspiration of gastric contents was identified in sudden infant death syndrome cases,¹⁰ and children with leigh syndrome, a heterogeneous progressive



Fig. 2: Airway with gastric content and frothy fluid

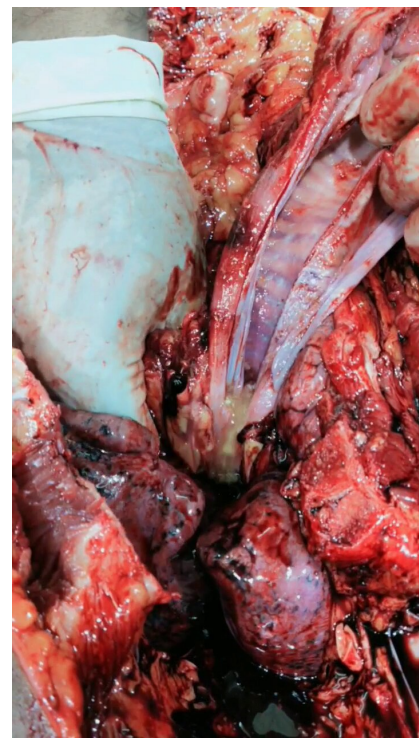


Fig. 3: Demonstrating expression of gastric content from main bronchus on compression of lungs

neurodegenerative disorder.¹¹ Microscopy of the lungs revealed the presence of gastric content and shed epithelial cells in the bronchoalveolar lumen.¹¹ The cause of death in an infant was determined as aspiration of vomit induced by Joubert syndrome, a neurological disorder related to hypoplasia of the cerebellar vermis.¹² If aspiration is found at autopsy, the possibility of an artifactual origin (chest compression, cardiopulmonary reanimation) has to be considered.¹³ In our case, the probable mechanism for cause of death due to aspiration of gastric contents under influence of alcohol was depressed consciousness and compromised airway defenses. Further it is suggested for the forensic medicine expert to also ask for the qualitative chemical analysis for alcohol or drug and histopathology of lungs in such cases.

4. Source of Funding

None.


5. Conflict of Interest


None.

References

1. Neill S, Dean N. Aspiration pneumonia and pneumonitis: a spectrum of infectious/noninfectious diseases affecting the lung. *Curr Opin Infect Dis.* 2019;32(2):152–7.
2. Bockholdt B, Ehrlich E, Maxeiner H. Forensic importance of aspiration. *Leg Med (Tokyo).* 2003;5(Suppl 1):311–4.
3. Bamber AR, Pryce J, Ashworth M, Sebire NJ. Fatal aspiration of foreign bodies in infants and children. *Fetal Pediatr Pathol.* 2014;33(1):42–8.
4. Hu X, Lee JS, Pianosi PT, Ryu JH. Aspiration-related pulmonary syndromes. *Chest.* 2015;147(3):815–23.
5. Hu X, Yi ES, Ryu JH. Aspiration-related deaths in 57 consecutive patients: autopsy study. *PLoS One.* 2014;9(7):e103795.
6. Nicolakis J, Gmeiner G, Reiter C, Seltenhammer MH. Aspiration in lethal drug abuse—a consequence of opioid intoxication. *Int J Legal Med.* 2020;134(6):2121–32.
7. DeDonno A, Marrone M, Santoro VA, Ostuni A, Cassano A, Grattagliano I, et al. A singular case of asphyxia by choking on a handkerchief: accidental event or suicide to “shut-up” spirits. *Clin Ter.* 2017;168:293–6.
8. Friedman JH, Fernandez HH. Autopsy follow-up of a patient with schizophrenia and presumed idiopathic Parkinson’s disease. *Clin Neuropharmacol.* 2001;24(2):120–1.
9. Wada H, Nakajoh K, Satoh-Nakagawa T, Suzuki T, Ohru T, Arai H, et al. Risk factors of aspiration pneumonia in Alzheimer’s disease patients. *Gerontology.* 2001;47(5):271–6.
10. Alex N, Thompson JM, Becroft DM, Mitchell EA. Pulmonary aspiration of gastric contents and the sudden infant death syndrome. *J Paediatr Child Health.* 2005;41(8):428–31.
11. Ventura F, Rocca G, Gentile R, DeStefano F. Sudden death in Leigh syndrome: an autopsy case. *Am J Forensic Med Pathol.* 2012;33(3):259–61.
12. Ishikawa T, Zhu BL, Li DR, Zhao D, Michiue T, Maeda H. An autopsy case of an infant with Joubert syndrome who died unexpectedly and a review of the literature. *Forensic Sci Int.* 2008;179(2-3):67–73.
13. Berzlanovich A, Muhm M, Sim E, Bauer G. Foreign body asphyxiation - an autopsy study. *Am J Med.* 1999;107(4):351–5.

Author biography

Sundaragiri Suraj, Assistant Professor  <https://orcid.org/0000-0001-5567-0755>

Chaitanya Mittal, Assistant Professor  <https://orcid.org/0000-0002-1842-5627>

Velupugonda Sudha Sree, Postgraduate

Sagarika Paaleti, Postgraduate

Cite this article: Suraj S, Mittal C, Sree VS, Paaleti S. Sudden death following aspiration of gastric contents under the influence of alcohol. *Indian J Forensic Community Med* 2022;9(4):188-190.