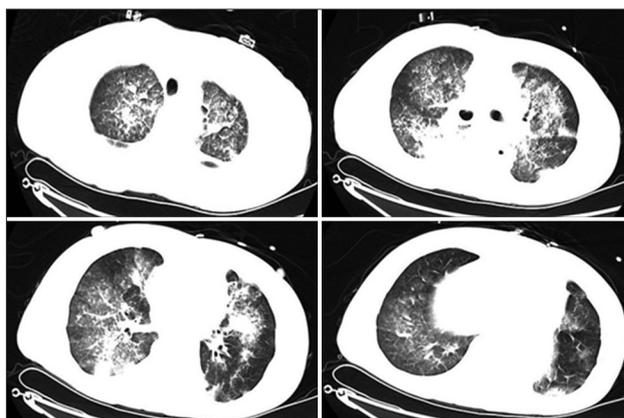


# Local Anesthetic Lidocaine for Gastroscopy Induces Diffuse Alveolar Hemorrhage

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To the Editor: A 52-year-old female patient was admitted to the hospital on November 10, 2016, due to “four hours of cardiopulmonary arrest after fiber endoscopy.” Twelve years ago, she was admitted for a radical operation of esophageal cancer and underwent radiotherapy and chemotherapy in our hospital. She had no history of respiratory disease, hemoptysis, or drug allergy. Two years ago, the patient underwent a follow-up fiber endoscopy in our hospital. Lidocaine was applied to the throat for surface anesthesia before the endoscopy operation. Propofol, along with oxygen inhalation, was administered intravenously for general anesthesia during the operation. Gastroscopy was performed smoothly, but the patient suddenly became unconscious. Blood spurted out from the airway during tracheal intubation. She was treated with dopamine/metaraminol bitartrate and aminophylline/methylprednisolone. After gaining consciousness, the patient was sent to the Intensive Care Unit. The computed tomography (CT) of the thorax (February 4, 2014) showed postoperative changes of esophageal cancer and extensive exudation of the lungs. She was discharged from the hospital upon improvement of her condition. This time, she came to our hospital for a routine gastroscopy (only lidocaine topical anesthesia was used in the throat; propofol was not included) in November 10, 2016. Approximately 10 min after the completion of gastroscopy (the procedure was smooth), she developed dyspnea, became unconscious, and exhibited weak and nod-like breathing. Blood sputum was aspirated from the airway. The blood gas analysis revealed pH at 7.073, PaCO<sub>2</sub> at 116.4 mmHg (1 mmHg = 0.133 kPa), and PaO<sub>2</sub> at 82.9 mmHg. She was immediately given cardiopulmonary resuscitation, tracheal intubation, and ventilator-assisted ventilation. Treatments for hemostasis, antispasmodic asthma, and vasoactive drugs were also administered. We found a significant amount of bloody secretion in the airway and respiratory harshness in both lungs. The electrocardiogram revealed sinus rhythm with occasional premature ventricular contraction. The chest radiography indicated bilateral exudative process. The CT of the thorax (November 10, 2016) revealed diffuse alveolar exudation [Figure 1]. She was treated in intensive care and administered with mechanical ventilation, airway strengthening management, and nutritional support, as well as anti-infection, antispasmodic, anti-asthma, epilepsy control, hypothermia, and hemostasis medications.



**Figure 1:** Computed tomography chest transverse section demonstrating diffuse alveolar exudation in different levels.

With consistent bloody airway sputum, the patient suffered airway hemorrhage again on November 13 and was given tracheotomy on November 18. The review of chest X-ray and CT on November 22 showed that both lungs were filled with ground glass-like and patchy high-density shadows, which indicated alveolar hemorrhage, pericardial thickening, and bilateral pleural thickening. The patient is currently in a coma and has lost most brain function, with no spontaneous breathing.

Diffuse alveolar hemorrhage is rare in clinical practice and is usually misdiagnosed. In this case, the clinical manifestations, laboratory results, and imaging findings are consistent with diffuse alveolar hemorrhage. Any factor that causes a wide range of alveolar-capillary endothelial cell injury and leads to alveolar hemorrhage can lead to this syndrome. This patient developed diffuse alveolar hemorrhage after undergoing gastroscopy twice. The most possible cause of this case is local anesthetic systemic

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toxicity. Zhao *et al.* reported three cases of allergic reactions induced by lidocaine surface anesthesia, including one case of pulmonary hemorrhage.<sup>[1]</sup> Austin *et al.* reported that other anesthetics, such as sevoflurane and butyrfentanyl, can result to diffuse alveolar hemorrhage.<sup>[2,3]</sup> According to literature, lidocaine at a 5 µg/ml plasma concentration induces the toxicity of lidocaine reaction, which manifests as lethargy.<sup>[4]</sup> Lidocaine has a high safety range and clinical applications; we should pay attention to its rare toxicity. Gastroscopy is commonly used in our clinical practice. Thus, clinicians should pay attention to any history of allergies when performing gastroscopy.

### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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### Conflicts of interest

There are no conflicts of interest.

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