Malignant esophagobronchial fistula with severe esophageal stenosis, successfully treated by transbronchial occlusion with cyanoacrylate glue

A 68-year-old man with advanced esophageal cancer was receiving chemotherapy. On day 6, he suddenly complained of massive greenish-black watery sputa that looked like stomach contents. A chest radiograph showed right hilar infiltration (Fig. 1). Chest computed tomography (CT) demonstrated a small cavitary lesion in the apical region of the right lower lobe next to the esophageal tumor (Fig. 2). The patient soon fell into respiratory failure and needed artificial respiration. Bronchoscopy showed massive black sputa, continuously coming up from the right B6a bronchus. Malignant esophagobronchial fistula due to necrotizing perforation of the esophageal cancer following chemotherapy was then diagnosed. The esophagus had been severely stenosed, and endoesophageal stenting seemed difficult. Thus, endobronchial closure was attempted. A 1.7-mm/5-Fr, 210-cm, ultra-tapered-tip catheter for endoscopic retrograde cholangiopancreatography (Contour ERCP cannula; Boston Scientific Japan, Tokyo, Japan) that had been filled with distilled water was inserted into the right B6a bronchus by a flexible video bronchoscope (Olympus EVIS BF-P240; Olympus, Tokyo, Japan). A mixture of 1.5 mL of cyanoacrylate glue (Alon Alpha A; Toa Gosei, Tokyo, Japan) and 1.5 mL of Lipiodol was rapidly injected into the catheter and then flushed with 10 mL of air. Just after the injection, the orifice of B6a was completely occluded by the hardened mixture, and the leak of black sputa was completely stopped (Fig. 3). Distribution of Lipiodol in the right S6a segment was demonstrated on a chest radiograph (Fig. 4). Chest CT also visualized the S6a area filled with Lipiodol, including the cavitary lesion (Fig. 5).

The patient was successfully released from artificial respiration on day 7 following endobronchial occlusion, without any respiratory complications. On day 8, bronchoscopy confirmed closure of the right B6a bronchus. On day 14, upper gastrointestinal series demonstrated relief from esophageal stenosis, without any evidence of a communicating fistula from the esophagus to the bronchus. Enteral nutrition via a nasogastric tube was then started, and the patient’s systemic status was dramatically improved. On day 21, chest CT confirmed no pulmonary infiltration in the right S6 area or reopening of the fistula.

Malignant esophagobronchial fistula is a critical condition and difficult to manage. Recently, various studies report endoesophageal stenting being widely used to...
close the fistula because that gives better quality of life [1]. However, with severe, complicated esophageal stenosis, an endoesophageal procedure is sometimes difficult. Endobronchial occlusion may be a choice in such cases; its use has been reported [2]. Endoesophageal application of cyanoacrylate glue is reported for closure of benign esophagobronchial fistulae [3, 4]. Also, we have previously reported safe usage of cyanoacrylate glue for endobronchial closure of malignant bronchopleural fistula [5]. We believe this is the first report of endobronchial occlusion of malignant esophagobronchial fistula with cyanoacrylate glue.

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**Competing interests:** None