

Bronchopleural fistula secondary to bronchoalveolar lavage-induced pneumothorax: A rare complication

Sir,

Bronchoalveolar lavage (BAL) is known to be a safe and useful diagnostic procedure to obtain samples from the lower respiratory tract. Rare complications attributable to BAL are hypoxia, aspiration, fever, and bleeding.^[1] Fiberoptic bronchoscopy (FOB)-induced pneumothorax is reported in 0.1% of cases, whereas pneumothorax after BAL has been reported in seven cases where the biopsy was taken through FOB.^[2,3] The incidence of bronchopleural fistula (BPF) varies from 4.5% to 20% after pneumonectomy and 0.5% after lobectomy, but BPF after pneumothorax has not been reported.^[4] We report a rare case of BPF secondary to BAL-induced pneumothorax.

A 65-year-old male known case of carcinoma hypopharynx underwent total laryngectomy, esophagectomy, and tracheostomy under general anesthesia. Preoperative chest X-ray revealed a cavity lesion in the right lower zone with no air–fluid level. Pulmonary function test suggested mild restrictive disease, and echocardiography was normal. After prolonged surgery, the patient was shifted to the surgical intensive care unit (ICU) for postoperative mechanical ventilation. On day 3, the patient was maintaining oxygen saturation (SpO₂) of 90% on T-piece, but on auscultation, there was reduced air entry in the left side. Suspecting a mucous plug after chest X-ray, a BAL was performed in the left lung with 2 aliquots of 20 mL normal saline using a gentle suction of 50–60 mmHg. Few hours after the procedure, the patient had tachypnea, respiratory distress, and dip in saturation to 85%. Chest radiograph confirmed the presence of a right lung pneumothorax [Figure 1]. Immediately, a 24-F intercostal drain (ICD) tube was placed in the fourth intercostal space. Gush of air was heard and bubbles started appearing in under water drain. Slowly the vitals of the patient improved to SpO₂ of 96%–97%. The



Figure 1: Showing pneumothorax in the right lung after the bronchoalveolar lavage procedure

patient was maintaining saturation on T-piece of 90%–95% on day 4 and day 5, but underwater seal showed bubbling and chest X-ray showed residual pneumothorax. The patient found difficult to wean from the ventilator showing bubbling in underwater drain with each positive-pressure ventilatory cycle, which raised the differential diagnosis of BPF. A computer tomography scan of the chest revealed residual pneumothorax, pus-filled cavity in the right lower zone, and ICD *in situ*.

Pneumothorax post BAL in this case could be the sequelae to air trapping or instilled normal saline, which resulted in rupture of an air-filled cavity. BPF during the procedure possibly results from a snugly wedged FOB into the bronchus. To avoid similar cases in future, a high level of vigilance toward procedural safety and a structured

approach is required during FOB and BAL procedure on ICU patients. The postprocedural chest X-ray should be checked. Maintaining of wedge position, gentle handling of FOB to avoid bronchial trauma, and application of gentle suction (50–80 mmHg) while collecting the lavage specimen in the collection trap are crucial to prevent pneumothorax and BPF.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that his name 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.

***Shalendra Singh, Shreyas Kate, Saurabh Sud,
Deepak Dwivedi***

*Department of Anaesthesiologist and Critical Care, Armed Forces
Medical College, Pune, Maharashtra, India.*

E-mail: drsinghafmc@gmail.com

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