A case of posttraumatic caverno-cutaneous fistula and bronchiectasis in an adult

Sir,

Thoracic caverno-cutaneous fistula is a rare entity with only scarce literature till date. Most of the previous reports are related to spontaneous caverno-cutaneous fistula due to rupture of the tubercular cavity into the skin. We report here a case of 50-year-old man who presented with cough with purulent foul smelling sputum and fever diagnosed as a case of posttraumatic caverno-cutaneous fistula with right lower lobe bronchiectasis and lingular consolidation.

Our case depicts a 50-year-old man, farmer by occupation, who presented to our pulmonary clinic with cough, purulent foul-smelling sputum (50 mL per day), and low-grade fever for the past 1 month. He was a nonsmoker and had no comorbid illnesses. About 30 years ago, he was hit by a buffalo on his neck, chest, and abdomen which had been managed conservatively. Further, he complained of intermittent episodes of fever, purulent sputum, and on and off purulent discharge from the right posterior chest. He had already received multiple courses of antibiotics and one course of antitubercular therapy in the past.

At presentation, his vitals were as follows: heart rate 96 beats/min, blood pressure 110/70 mm Hg, respiratory rate 20 breaths/min, temperature 101°F, and oxygen saturation of 96% in room air. Chest examination showed one scar mark in the left neck and another healed scar in right infrascapular area with a discharging sinus [Figure 1a]. Auscultation of bilateral lung fields revealed coarse crepitations on the right basal lung. Routine investigations showed haemoglobin of 12.6 gm/dL, total leucocyte count of 9650/cmm with polymorphs 67% and lymphocytes 23%. Renal and hepatic function tests were normal. Sputum microscopy and Xpert-MTB were negative for tuberculosis. Sputum aerobic cultures grew *Klebsiella pneumoniae* and *Escherichia coli* in two successive samples. Serology for human immunodeficiency virus was negative. Chest radiograph showed right lower zone haziness with multiple fluid levels [Figure 1b]. Computed tomography (CT) scan of the chest demonstrated an air pocket in direct communication with the chest wall through a 2.5 cm long and 3 mm wide tract confirming a caverno-cutaneous fistula [Figure 1c] and right lower lobe bronchiectasis with a patchy consolidation in lingula [Figure 1d]. He received intravenous piperacillin-tazobactam combination for 14 days as per sensitivity report in addition to postural drainage and supportive care. Later he was referred to cardio-thoracic division for surgical correction of the fistula. However, he was not keen for any surgical intervention because of significant clinical improvement. He is under our regular follow up and doing well.

Fistula is an abnormal anatomical communication between an organ, blood vessel, or intestine with another organ like skin,[1,2] Bronchopleural fistula commonly occurs due to rupture of lung abscess, necrotizing pneumonia, resectional lung surgery, or perforating chest trauma.[2] However, bronchopleuro- or cavernopleurocutaneous fistula is very rare and only few cases are reported till date.[3,4] Most reported cases are spontaneous in nature related to the rupture of tubercular cavity[1,3,5] or fungal infections like histoplasmosis[6] or pleural aspergillosis.[8] The proposed mechanism for rupture of tubercular cavity into the skin surface is due to increased tension or check valve mechanism within the cavity. We believe that the fistula in our patient was of traumatic origin as evidenced by a history of injury by a bullock 30 years ago, the sinus opening located at the site of original injury within the residual scar mark, recurrent bronchopulmonary infections following the injury, and there was no microbiological evidence for...
active or previous tuberculosis. What was surprising in our case was the absence of pleural effusion, empyema, or pneumothorax. Such fistulous communication between the lung cavity and chest wall without spillage into the pleural space is extremely rare and very few cases have been reported.\textsuperscript{[1,2]} This possibly occurs because of localized pleural symphysis due to chronic pleuropulmonary infection.\textsuperscript{[1,2]} The fistulous tract could be delineated by fistulogram added with contrast CT scan\textsuperscript{[1]} or even by noncontrast CT scan alone.\textsuperscript{[5]} In our case, the fistulous communication was evident in the noncontrast images; hence, we did not perform contrast study. Our patient presented with an episode of active infection evidenced by the fluid filled dilated bronchi, an area of consolidation in lingula and growth of bacteria in the sputum. He responded to a course of antibiotics and is under regular follow up. Not all caverno-cutaneous fistulas occur as complications of tuberculosis. Noniatrogenic trauma to the chest could be a potential cause for the future pulmonary-cutaneous fistula and such history should be meticulously sought from the patient. Posttraumatic caverno-cutaneous fistula can occur without pleural involvement. Modern contrast-enhanced CT can diagnose caverno cutaneous fistula without the need of fistulogram. For the differentiation of caverno-cutaneous fistula from pleurocutaneous fistula, contrast CT is needed. Appropriate antibiotics and postural drainage play central role in the treatment of traumatic caverno-cutaneous fistula complicated with bronchiectasis. In the diagnosis of posttraumatic cavernocutaneous fistula, contrast CT is the first investigation of choice, but clinical history of trauma and physical examination of any scar or discharging sinus is the initial step to clinch the diagnosis.

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.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

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**Submitted:** 08-Feb-2022  \hspace{1cm} **Revised:** 02-Jun-2022  \hspace{1cm} **Accepted:** 22-Jun-2022  \hspace{1cm} **Published:** 25-Oct-2022

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