Case Report

A rare case of pediatric enteroplueural fistula, which presented as lung abscess

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Abstract

We report a case of a 14-year-old male patient referred to us as a case of right-sided lung abscess. The patient was treated for the enteric perforation elsewhere, following which he developed productive cough, which progressively worsened. The preoperative diagnosis of entero-pleural fistula was made with the help of thoraco abdominal computed tomography scan after 4 months of antitubercular and antibiotic treatment. Enteric perforation leading to entero-pleural fistula is very rare. The patient did well after laparotomy and complete excision of the fistula.

Key words: *Entero-pleural fistula, Lung abscess, Ileal perforation*

Entero-pleural fistula is a rare entity in which there is a communication between the intestinal tract and pleural cavity. Entero-pleural fistula following the enteric perforation may be caused by communication between the small bowel loops and the abscess cavity, eroding through the diaphragm into the pleural space [1,2]. There are very few case reports in English literature about this, based on PubMed citations. We present a case of entero-pleural fistula in a 14-year-old child, which presented as a case of lung abscess after he underwent a surgery for ileal perforation as a complication of enteric fever.

CASE REPORT

A 14-year-old, developmentally normal boy, who was born of a non-consanguinous marriage, presented with complaints of cough and difficulty in breathing for 3 months. The patient had no complaints of fever, loss of weight, or appetite. There was no history of contact with tuberculosis. The patient had a history of enteric fever 4 months back, followed by ileal perforation and was operated for the same elsewhere. Patient was asymptomatic for 1 month, after which he developed cough, which progressively worsened. The cough was aggravated on lying down (expectorating copious amounts of sputum) but was relieved in the sitting position. The patient was unable to sleep for days together in the supine position, and he used to sleep in an upright position. The patient was taken to a nearby hospital, where he was started on antibiotics and, later on the antitubercular medication as there was no significant improvement. After taking antitubercular drugs for a period of 1 month, the patient showed no clinical improvement. Hence, the patient was referred to us for further management.

On admission, the patient's anthropometric measurements were: weight of 32 kg (<5th centile on the centers for disease control [CDC] growth chart), height of 153 cm (10th centile on CDC growth chart), and body mass index of 13.7. On examination, the patient was grossly emaciated with pallor, showed significant cervical and axillary lymphadenopathy with minimal dilated veins on the abdomen and a large incisional hernia of about 10 cm × 8 cm. Systemic examination showed bilateral coarse crepitations with decreased air entry on the right infra scapular region.

Blood investigations showed hemoglobin of 7 g/dl, peripheral smear showed hypochromic microcytic anemia, erythrocyte sedimentation rate was mildly elevated, and work up for tuberculosis was negative. Chest X-ray showed features suggestive of lung abscess (Fig.1). Intercoastal drainage was done, and about 800-900 ml of pus was drained. The patient was empirically started on intravenous antibiotics. On further probing, a history of food particles in the sputum was revealed. A computed tomography (CT) scan (Fig. 2) of the chest and abdomen were performed to rule out any abnormal connection between the pleural cavity and the intestine. The scan confirmed the entero-pleural fistula.

The patient was taken up for surgery with preoperative blood transfusion to build up the patient for surgery. Explorative laparotomy was done, and fistula of approximately 2 cm was identified between the distal small intestine and diaphragmatic

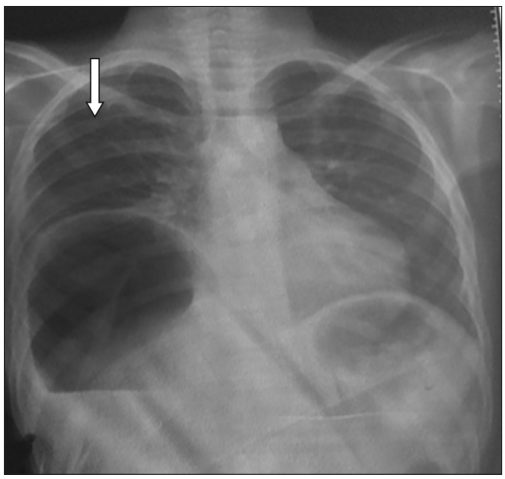

Figure 1: Chest X-ray shows air fluid level suggestive of lung abscess

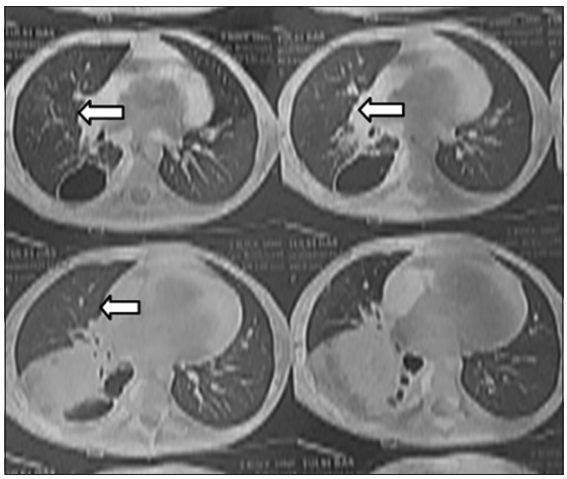

Figure 2: Computed tomography scan of chest and abdomen suggestive of abnormal communication between the chest and abdomen

area on the right side. It was suture ligated and closed. The thorax was not opened as it was deemed unnecessary due to fragile patient condition. The option to do a thoracotomy in case he did not improve was kept in mind. The incisional hernia was also repaired in the same sitting. An intercostal drain was kept in the right thorax. Patient was kept in intensive care unit for continuous monitoring. Patient improved significantly after 2 weeks with no new symptoms.

DISCUSSION

Fistula is an abnormal passage or connection usually between two internal organs, or leading from an organ to the surface of the body. External fistulae connect any portion of the gastrointestinal tract with the skin. Internal fistulae connect the gastrointestinal tract with another internal organ, peritoneal space, retroperitoneal areas, or the thorax (pleural cavity or mediastinum) [1]. Gastrointestinal fistulae occur mostly following surgery (80%) but they occur spontaneously as well. They are associated with substantial morbidity and mortality [2]. Pleural space may communicate pathologically in the form of gastrointestinal fistula, gastropleural fistula, esophagopleural fistula, colopleural fistula and small bowel fistula.

The diaphragm is a strong barrier that separates the pleural and abdominal cavities. In certain situations formation of a fistulous tract might occur, for example, in cases of trauma, malignancy, sub diaphragmatic infection, post radiation and viscous perforation [3,4]. In such cases thorough history, physical examination, nature of pleural fluid drainage, pus culture and radiological examination is essential to diagnose the underlying pathology.

In 1987, Ronald L. Richterman reported a case of jejunopleurobronchial fistula and he mentioned that he found a similar case by reviewing the literature [5]. In 2012, Jamal, Alaydi reported a case of entero-pleural fistula in a 65-year-old man following an emergency left hemicolectomy for colonic gastrointestinal stromal tumor [6].

In the present case, an improperly treated enteric perforation led to secondary infection and accumulation of pus, which eroded the liver parenchyma and entered the base of the diaphragm. This led to continuous friction on the diaphragm which resulted in the formation of a blind tract that is fistulous connection between the small intestine and pleural space. Second, the pus culture, which was taken from the site grew non-specific organism *Escherichia coli* which again indicates that the infectious agent is from the small intestine. Radiologically, X-ray will not properly confirm the diagnosis; hence the best modality will be either CT or magnetic resonance imaging [3]. Fluctuation of pleural catheter output in relation to oral intake was indicative of the fistula. In summary, gastrointestinal pleural fistula must be considered as a possible cause of refractory empyema.

CONCLUSION

Improperly operated ileal perforation may lead to the collection and secondary infection which later causes fistulous tract that leads to morbidity to the patient. Gastrointestinal pleural fistula must be considered as a possible cause of refractory empyema.

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