

Case presentation

Bronchopleural Fistula and surgical wound infection

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Abstract

Introduction: Bronchopleural fistulas may occur spontaneously or post operative but prolonged air leak post fungal ball excision of the lung was reported in many cases with localized pneumothorax and post thoracotomy wound infection can also occur. At first fistulas can be managed initially with chest tube and suction, operative intervention is the last chose of management for most fistulas. Various successful nonsurgical techniques with or without bronchoscopes have also been described.

We describe treatment of a bronchopleural cutaneous fistula with deep wound infection post fungal ball excision with glue and hyiodine solution after identification of the fistulous cavity through the thoracotomy wound.

Subject and Methods

A 65-year-old woman known case of diabetes mellitus on insulin and hypertension on medication complaining of chronic cough, shortness of breath and hemoptysis since four months presented with cavitating lesion on her Lt Lower lobe of the lung for farther management.

On examination: no specific findings except diminished air entry at the Lt. side of the chest and expiratory wheezes in both lungs.

Lab. Investigations, within normal expect elevated alkaline phosphates. CBC within normal a part of megaloblstic anemia.

CxR and chest CT .scan showed cystic lesion suggestive of rupture hydatid cyst.

Spiromety study and echo-cardiography were at the borderline.

Fiberoptic bronchoscopy done R/O other (no endobronchial lesion) which was normal.

Patient underwent Lt Posterolateral thoracotomy for excision of the rupture hydatid cyst.

Finding:-the Lt.lung adherent to the chest wall, easy to bleed, black in color.

Fungal ball (mycetoma, aspergillum) at the apical segment of the Lt.lower lobe.

Inoculation of the fungal ball and capping (closure of the lung cavity) with preserve the lung tissue. 3rd .day post operative patient start to have leakage of air from the chest tube when coughing and during forced expiration.

Pt. put on continues suction on the chest tube, Chest radiographs revealed a small loculated pneumothorax.

10th day post op. Pt. underwent medical pleurodesis by tetracycline powder about 5 gram installed in her pleural cavity through chest tube. But still there is minimal air leak despite full expanded lung.

Pt. was given supportive therapy as human albumen to correct her hypoalbumenemia and Vit.C.

Pt. was put on I.V.hydrocortison 100 mg.tid. for her S.O.B. and also ventolin nebulizer.for one week .

Pt. has got wound infection and partially wound dehiscence later on.

Two weeks of surgery again Pt. underwent another pleurodesis by tetracycline powder about 5 gram.installeted in her pleural cavity through chest tube. The air leak sopped for two days. (Tetracycline powder seen on her sputum) at that time.

In 15 of April last pleurodesis by doxacycline powder (2400mg.) done and Pt. was put on continues suction on chest tube. (Sputum is free of powder).

Pt. now Glacerna (ensure) and diabetic and high protein diet and she is on good general condition

But regarding the size of communication between bronchial tree and pleural cavity, it seems it is very small.

In April 18, 2012 Pt. underwent thoracoscopy, (through previous surgical wound) and fluoroscopy with using contrast radio-opaque (nonionic contrast medium) was planned to localize the fistula, but there is no signs of fistula could be detected.

Then Patient was planned for fiberoptic bronchoscopy with methylin blue injected in the pleural cavity to localize the fistula site (was at the apical segment of the lt. lower lobe).after diagnosing and localizing the fistula patient sent to KHMC to embolize the fistula by endobronchial closure of a bronchopleural fistula with glue (with 0.5 mL of N-butyl-2-cyanoacrylate) and metallic coils. But they failed to do that.

Patient readmitted to the AL-Bashir hospital as a case of post operative localized pneumothorax with bronch-pleural fistula and deep thoracic wound infection. Patient was planned for thoracoscopy, (through previous surgical wound) to localize the fistula, the fistulous cavity localized at the apical segment of the Lt. Lower lobe.

Small catheter put in the fistulous cavity for irrigation with normal saline and then the fistulous cavity was embolized with 0.5 mL of N-butyl-2-cyanoacrylate immediately after embolization, the air leak stopped and the pneumothorax cavity collapsed. However, 2 4 hr after the procedure the patient again started having air leak through the wound , and repeated chest radiographs showed reappearance of the pneumothorax ,the same procedure repeated many times but still the air leak still there.

The wound and the remnant pneumothorax started on Hyiodine solution dressing for 2 weeks.

The patient had prompt reduction in the size of the loculated pleural cavity and air leak less than before and wound discharge was decrease through over the next few days. Patient discharge home but kept on Hyiodine dressing at home for 4 weeks.

The air leak stopped and the wound healed about 6 to 8 weeks from the Hyiodine use. Over 3months of follow-up, the patient had no complaints pertaining to his chest. Chest radiographs showed complete resolution of the pneumothorax with healing of the fistula and the wound is completely healed.

Discussion:

³Bronchopleural fistulas may occur as a result of many lung conditions; particularly those occurring after excision of fungal ball of the lungs are rather difficult to treat. Operative intervention is usually required if chest tube and suction fail to treat. Surgical procedures for treatment for such cases are not only difficult but also associated with morbidity and mortality. Now days a variety of non surgical interventions are present like endobronchial occlusion methods (fibrin glue and metallic coils) or transthoracic approach by using for example, tetracyclines have been tried successfully. The most important thing is to identify the site of bronchopleural fistula with bronchoscopes or using other technique. We used to localize the fistula site by fiberoptic bronchoscope with small amounts the methylin blue injection in the pleural cavity in the same sitting.

There are many cases reported of closure of a postoperative peripheral fistula after two bronchoscopic applications of methylcyanoacrylate. and also occluded of bronchopleural fistulas in two patients using tissue glue, also obtained fistula closure by instillation of tetracycline into the fistula via a fiberoptic bronchoscope using a balloon catheter and blood clot occlusion technique , also doxycycline can produce permanent closure, presumably by inducing local mucosal inflammation and edema.

In almost all the previous reports, bronchoscopes were used to localize the fistula and then to embolize it, with or without angiography catheters.

In our patient, we achieved only temporary closure of bronchopleural fistula by placed fibrin glue alone or mixed with doxycycline direct in the fistulous cavity through the wound but not more than 48 hours for many times. It means application of tissue glue in the fistulous tract alone or with doxycycline achieved only partial closure.

Whereas application of hyiodine direct in the fistulous cavity and in the wound achieved permanent closure within 6 to 8 weeks from the treatment (stop of the air leak from the lung with complete lung expansion without any residual pneumothorax and with complete wound healing

Conclusion:

In summary, closure of a bronchopleural fistula and wound infection post lung fungal ball is very difficult to treat and it needs long time to control it. But it can be achieved with application of hyiodine direct in the fistulous cavity and in the wound as well as with angiography catheters under fluoroscopic guidance (fibrin glue and metallic coils) as a simple and minimally invasive treatment if you can localize the fistula tract by bronchoscope that requires only topical anesthesia. Closure of an endobronchial fistula thus achieved can save the patient from the complications of surgery and general anesthetics.

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