Pleurovideoscopy in a General Hospital

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SUMMARY

A 48 a year old Malay gentleman, was investigated for recurrent unexplained right pleural effusion. Initial investigations showed exudative pleural effusion with neutrophil predominance. Tuberculosis (TB) workout were negative. Pleuroscopy showed multiple adhesions with granulomatous deposits at the parietal pleural surface. Adhesions were released by forceps. A chest tube was inserted. Intrapleural streptokinase instilled for three consecutive days. TB treatment was initiated. There was clinical and radiological improvement and he was discharged well after one week of hospitalization. He remained well at follow-up two months later.

KEY WORDS:
Pleurovideoscopy, Exudative, Granulomatous

INTRODUCTION

Patients with complicated pleural effusion may not be accurately diagnosed unless they undergo video-assisted thoracoscopy performed under general anaesthesia. The introduction of flex-rigid pleurovideoscopy has revolutionised the management of these patients.

CASE HISTORY

A 48 year old Malay male lorry driver, a 20 pack-year smoker, presented himself to our hospital with a history of shortness of breath of one week duration prior to admission. The dyspnoea was aggravated by driving and relieved by rest. It was associated with nocturnal fever, chills, rigor sweats and occasional non-productive cough. He had lost 10kg weight loss over a few months but had a good appetite. His father had pulmonary tuberculosis many years ago.

Clinically, he was comfortable. Respiratory rate was 22 per minute. He was not clubbed or pale. He was normotensive, febrile at 38°C, tachycardic at of 100 beats per minute. There was no lymphadenopathy. Examination of the lungs revealed reduced movement and stony dullness over the right lower chest. Chest radiograph confirmed a right sided moderately large pleural effusion. He had leucocytosis of 12,500 $x10^9$ (lymphocytes 60.1%). His haemoglobin was 12.5 g/l and platelet counts was 488 x 10^3. Erythrocyte sedimentation rate was 10 mm/hour. Mantoux test was negative. Sputum and blood cultures were negative Random blood sugar was 5.2mmol/l. Diagnostic pleural tap showed an exudative effusion with a protein content of 57g/l and neutrophil predominance. Pleural fluid cytology did not reveal any malignant cells. He was treated as for parapneumonic effusion with cefuroxime and erythromycin for two weeks. At follow-up at the respiratory clinic two weeks later, he still had low grade fever and the effusion persisted. He consented to undergo pleurovideoscopy.

A flex-rigid pleurovideoscopy (Olymous LTF 160) was performed on the fourth of April 2006 in the bronchoscopy suite. Patient was prepared and positioned left lateral and the procedure was done under aseptic technique. Sedation consisted of intravenous midazolam 5mg, intravenous pethidine 50mg and intravenous fentanyl 50mcg. The pleural cavity was achieved via a flexible trocar after adequate cleaning and local infiltration at the fourth intercostal space, mid-axillary line. Once the pleural cavity was entered, the flex-rigid pleurovideoscope was inserted.

Straw coloured effusion was noted, there were multiple adhesions. Adhesiolysis was performed with forceps (Figure 2). Granulomatous deposits were noted over the parietal pleura. A total of 500cc straw coloured fluid was aspirated. Multiple biopsies of the parietal pleura were taken. A chest drainage tube was inserted over the fifth intercostal space to facilitate the instillation of intrapleural streptokinase 250,000 units daily given for three days. Histopathological examination of the pleural biopsies was consistent with granulomatous inflammatory infiltrates consisting of giant cells and caseating necrosis. Ziehl-Neelsen stain was negative.

With the history of contact with pulmonary tuberculosis, granulomatous deposits and multiple adhesions, a diagnosis a tuberculous pleuritis was entertained. The patient was started on anti-tuberculous chemotherapy with intramuscular streptomycin 1g daily, isoniazid 300mg daily, rifampicin 600mg daily, pyrazinamide 1250mg daily and pyridoxine 10mg daily.

The chest tube continued to drain more than 250mls of straw coloured fluid daily and by the 6th day only 50 cc of fluid was drained and was removed after a week.

The patient's temperature settled, his appetite improved and he was discharged the 8th day. At follow-up two months later, there was no evidence of residual pleural effusion and he was well and had put on 4kg weight.

DISCUSSION

Pleuroscopy is a method in which physicians inspect and operate within the pleural cavity[1]. Rigid pleuroscopy was initiated by Hans-Christian Jacobaeus in 1910. Jacobaeus stated that "In making a differential diagnosis between

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Fig. 1: Pleural space inspected after insertion of flex-rigid pleurovideoscope

Fig. 2: Adhenolysis with forceps

tumors and pleurisy of other origin, thoracoscopy is of no small value". Pleurolysis via thoracoscopy became a mainstay of tuberculosis therapy throughout the 1920s. The interest in thoracoscopy however, waned after 1945 when streptomycin was introduced to treat tuberculosis[1]. In 1988, Davidson et al used the flexible bronchoscope to access the pleural cavity[2]. Video-assisted thoracoscopic surgery surged in 1990 with rigid instruments, with patients were put under general anaesthesia[3] Mc Lean *et al* first studied the combination of a flexible and rigid thorascope in 1998 using local anaesthesia[4].

In our patient, as a diagnostic pleural tap did not reveal a diagnosis, he was treated empirically as for parapneumonic effusion but did not improve. The differential diagnosis of an exudative pleural effusion are exhaustive, however tuberculosis remains high on the list in our endemic region. Excluding a mitotic lesion was our main concern in view of the history of heavy smoking. Fentanyl was used as sedation after discussion with the anaesthetist and a portable ventilator was at standby.

The findings of multiple pleural adhesions, granulomatous deposits consisting of giant cells and caseating necrosis on histopathological examination and absence of other sinister masses clinched the diagnosis albeit negative for acid fast bacilli with Ziehl Nielseen staining. Pleuroscopy provided easy adhenolysis and drainage of pleural fluid. This was followed with more fluid drainage with instillation of intrapleural fibrinolytic agent (streptokinase) as it was impossible to lyse all the adhesions during pleuroscopy. The patient further improved with anti-tuberculous chemotherapy. Adhenolysis via flex-rigid pleuroscopy has prevented the development of empyema thus avoiding surgical intervention.

CONCLUSION

Flex-rigid pleuroscopy is an effective tool for the evaluation of pleural and pulmonary diseases when routine cytological and closed needle biopsy are inconclusive. It is a safe procedure, not requiring general anaesthesia and patient remains conscious or mildly sedated during the procedure. With its very promising and exciting future, we look forward to performing many more pleuroscopies in our quest to advance the practice of pulmonary medicine.

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