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Case Report

Middle lobe syndrome- a rare but an important clinical entity

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ABSTRACT

Middle lobe syndrome refers to a clinical condition that is characterized by recurrent or chronic collapse of the middle lobe of the right lung. Inefficient collateral ventilation, infection and inflammation in the middle lobe or lingula are thought to play a role in the pathogenesis of this condition. MLS can be obstructive or non-obstructive; the management varies according to the aetiology. Patients with proven endobronchial lesions or malignancy are usually offered surgical resection while most patients with non-obstructive aetiology respond to medical treatment consisting of bronchodilators, mucolytics and broad-spectrum antibiotics. We present a case of MLS who was managed conservatively in our ICU but did not respond and required surgical intervention later.

Keywords: Bronchiectasis, Decortication, Lobectomy, Middle lobe syndrome

INTRODUCTION

The term middle lobe syndrome (MLS) was coined by Graham and his associates in 1948 to describe middle lobe atelectasis resulting from bronchial compression.[1]

The middle lobe syndrome is characterized by recurrent or chronic collapse of the middle lobe of the right lung. Obstructive MLS is usually caused by endobronchial lesions or extrinsic compression of the middle lobe bronchus. In the non-obstructive type, no obstruction of the middle lobe bronchus is evident during bronchoscope or with computerized tomography of the chest.[2]

CASE REPORT

A 51 year old male, known smoker with a history of chronic cough was admitted in our ICU with complaints of acute onset of fever, haemoptysis and right sided chest pain on lying down. On examination he was found to have tachypnea, tachycardia, reduced air entry bilaterally and low oxygen saturation. Short periods of non- invasive ventilation were tried but subsequently had to be intubated and mechanically ventilated in view of worsening respiratory distress. He was started on antibiotics, nebulization, mucolytics and chest physiotherapy.

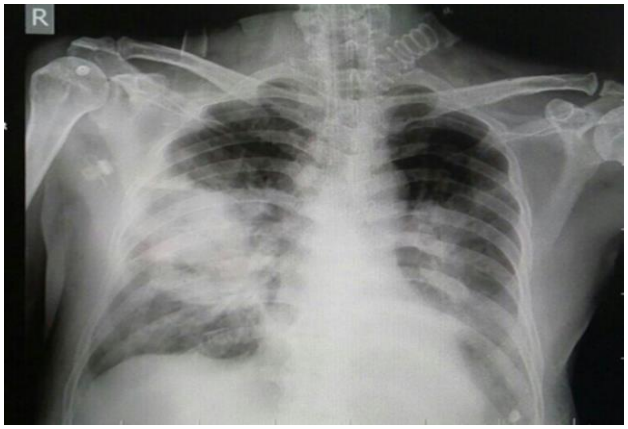

Figure 1: Chest X-ray showing consolidation of the right middle lobe.

Chest X-ray showed bilateral infiltrates and ABG analysis revealed severe hypoxia. Patient was sedated, paralyzed and initiated on ARDS protocol with high PEEP and FIO2. Broncho alveolar lavage (BAL) and nasopharyngeal swab tested negative for tuberculosis and swine flu respectively. Antibiotics were escalated based on culture reports and other supportive measures continued. While patient was being ventilated with high PEEP, he developed spontaneous pneumothorax for which ICD was inserted. Follow-up chest X-rays showed a distinct opacity involving the right middle zone (Figure 1).

CT Chest was done which showed consolidative changes in bilateral lung fields, chronic bronchiectatic changes in the right middle zone (Figure 2) bilateral mild pleural effusion, right minimal pneumothorax with ICD in-situ and multiple mediastinal lymph nodes suggestive of infective aetiology.

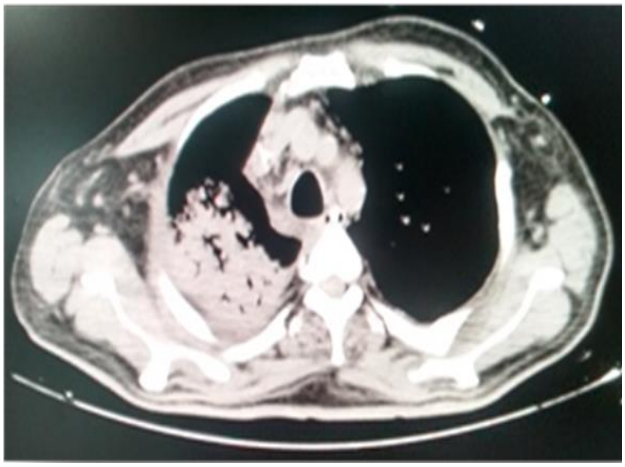

Figure 2: CT Thorax showing chronic bronchiectatic changes in the right middle lobe.

Bronchoscopy was done, mucous plugs were removed and BAL sample was sent for culture and malignant cells. He was tracheostomised in view of prolonged ventilation. Daily chest physiotherapy and postural manoeuvres were performed to improve ventilation.

In spite of all the conservative measures there was no significant improvement and surgical intervention had to be planned. Patient underwent right thoracotomy under general anaesthesia using a double lumen tube and one lung ventilation. Decortication was done along with middle lobectomy and drainage of upper lobe collections. His lung biopsy showed features of organizing pneumonia without any evidence of malignancy. Post operatively he continued to be on ventilator with weaning mode. After a week time he developed empyema and a bronchopleural fistula (BPF) with significant leak. Patient was taken up for empyema drainage and BPF sealing but due to severe hypoxia intraoperatively, surgery was abandoned and was shifted to ICU where he subsequently succumbed to his illness.

DISCUSSION

The middle lobe syndrome generally refers to atelectasis in the middle lobe of the right lung. The radiographic features of this syndrome are combination of right middle lobe collapse and bronchiectasis. There is no obstructing bronchial lesion.

There are various theories explaining the causes for the syndrome; the bronchus to the right middle lobe (RML) is subjected to compression by enlarged or cicatrizing lymph nodes. As a result RML is particularly vulnerable to collapse. At the point of bifurcation the bronchus is surrounded by a chain of lymph nodes which drain the lymphatics not only of the middle lobe but also of the lower lobe. When these lymph nodes are involved, they exert pressure on middle lobe bronchus. Bronchial channel when obstructed, the lobe collapses leading in many instances to bronchiectasis.[3-5]

Collateral ventilation has been described which allows air to pass into obstructed lobules from adjacent well ventilated ones so that the obstruction may then be coughed out and collateral pathways are effective not only in maintaining ventilation but also in effecting reinflation in already atelectatic lobes.[6] The other basic pathogenetic factor lies in the isolation of middle lobe and thus loss of collateral ventilation from adjacent lobes. Impaired or absent collateral ventilation represents the cause for increased incidence of right middle lobe atelectasis when specific or non specific pneumonia and bronchitis sets in this lobe. This small lobe is totally isolated from the lower lobe and relatively isolated from the right upper lobe to a degree which varies with the completeness of the lesser fissure.[7]

Clinically it is difficult to differentiate between obstructive and non-obstructive MLS. Only radiological evaluation can reveal any obstruction to middle lobe bronchus. Patients with the non-obstructive form, respond to medical treatment consisting of bronchodilators, mucolytics and broad-spectrum antibiotics along with chest physiotherapy and postural drainage. However, patients who do not respond to conservative treatment should be offered surgical resection with removal of the middle lobe or lingula. Although based on a limited number of studies, operative mortality and morbidity appear to be low following these procedures, and long-term outcome appears to be favourable. Hence early diagnosis and prompt treatment helps in better outcome of the condition.[1]

CONCLUSION

Middle lobe syndrome although is a rare entity, should be suspected when consolidation involves the middle lobe of the right lung on radiological evaluation. While many patients respond to medical treatment, surgical option should be considered for those who don't respond to conservative measures and those with obstructive

aetiology. Early diagnosis and appropriate measures can reduce the morbidity and mortality.

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