



“Swiss Cheese” Consolidation – Case Report

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Abstract

Chronic Obstructive Pulmonary Disease (COPD) is a preventable and treatable disease, which is characterized by persistent airflow limitation and chronic inflammatory changes in the airways and the lung to noxious particles and gases. Exacerbations and comorbidities contribute to the overall severity in individual patients. The clinical course of these patients may be interspersed with infective exacerbations. The number of infective exacerbations per year has a direct impact on the morbidity of these patients. We present an interesting case of a patient, who presented to our out patient department in acute infective exacerbation of COPD.

Keywords: consolidation, computed tomography, swiss cheese pattern

Introduction

Chronic obstructive pulmonary disease (COPD) is a progressive chronic disease which is characterised by an inexorable decline in respiratory function, exercise capacity, and health status.^[1] The clinical course of these patients are interrupted by acute exacerbations, the severity and frequency of which differs amongst patients. GOLD guidelines define an acute exacerbation of COPD as an acute event characterized by a worsening of the patient's respiratory symptoms that is beyond normal day to day variations and leads to a change in medication.^[2] These exacerbations are one of the most important determinants of health related quality of life.^[3] We

present an interesting case of a patient having very interesting radiological features.

Case

A 52 year old male, resident of Mumbai, tailor by occupation, presented to our out patient department with complaints of cough associated with mucopurulent expectoration, high grade fever and shortness of breath of 6 days duration. The patient was a chronic cigarette smoker of 35 pack years. He was previously diagnosed as a case of COPD and initiated on inhaler therapy, however was not compliant with the same. He had a past history of pulmonary tuberculosis 10 years ago, for which he had taken adequate anti tuberculous medications.

Examination revealed a cachexic individual with a body mass index of 18 kg/m^2 , a pulse of 120 beats per minute, and a blood pressure of 130/80 mmHg. He was severely tachypneic, having a respiratory rate of 30 per minute with the use of accessory muscles. His saturation was 88 % at room air. Auscultation of his chest revealed coarse crepitations all over his right hemithorax.

An electrocardiogram showed sinus tachycardia, without any other abnormalities. An arterial blood gas showed a pH of 7.39, pO_2 of 58 mm Hg and a pCO_2 of 48 mm Hg. A chest x ray (posterior anterior view) revealed right sided ill defined consolidation with bilateral upper zone fibrocalcific opacities.

This patient was further subjected to high resolution computed tomography of thorax, which showed right upper lobe consolidation having a characteristic “swiss cheese” appearance. His sputum was negative for the presence of acid fast bacillus.

He was managed with supplemental oxygenation, nebulized bronchodilators, a short course of oral corticosteroids, given at a dose of 1 mg/kg. Furthermore his treatment included intravenous Amoxicillin + Clavulanic acid at a dose of 1.2 gm twice a day. He responded to our treatment within a week in the form of defervescence of fever, improvement of saturation and clearing of chest x ray opacities. He was subsequently discharged after optimization of his inhaler therapy.

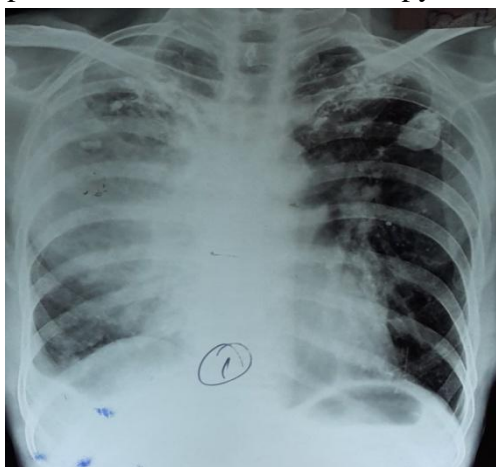


Figure 1: Baseline chest x ray showing right sided ill defined consolidation with bilateral upper zone opacities.

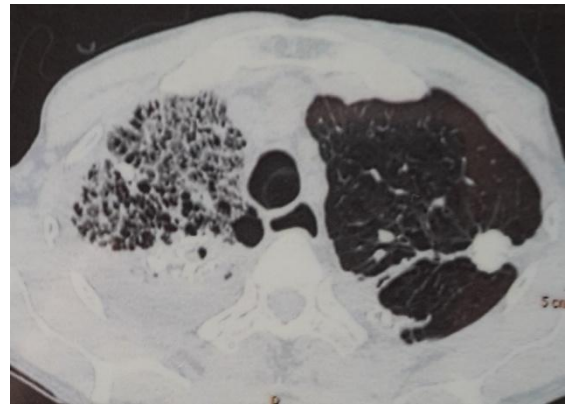


Figure 2: Computed tomography of thorax showing right upper lobe consolidation, with the characteristic “swiss cheese” appearance.

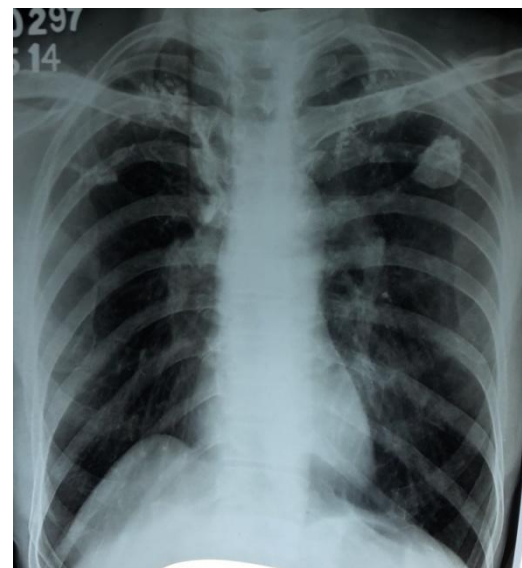


Figure 3: Resolution of right sided consolidation within a week of therapy.

Discussion

Chronic Obstructive Pulmonary Disease is a chronic respiratory condition characterized by inflammation of the lung parenchyma. The most common etiology for its development is cigarette smoking. Exacerbations of COPD are thought to be caused by complex interactions between the host, bacteria, viruses, and environmental pollution. Frequent exacerbations are associated with increased morbidity and mortality, a faster decline in lung function, and poorer health status, so prevention or optimal treatment of exacerbations is a global priority.

As far as radiological evaluation of COPD is concerned, a computed tomography of thorax offers the best possible option. Emphysema is

characterised in HRCT scans by the presence of areas of abnormally low attenuation which can be easily contrasted with surrounding normal lung parenchyma.^[4,5]Centrilobular emphysema of mild to moderate degree is characterised on HRCT scans by the presence of multiple small round areas of abnormally low attenuation, several millimetres in diameter, distributed throughout the lung, but usually having an upper lobe predominance.

Patients of COPD are prone to develop exacerbations, with bacterial infections being one of the most important cause. These infective exacerbations may take the form of consolidation. However the presence of emphysema affects the imaging manifestation of consolidation. When pneumonia develops on a background of pulmonary emphysema, parenchymal consolidations caused by pneumonia appear to have multiple cavities due to underlying low attenuation areas. This appearance is referred to as “Swiss cheese appearance”.^[6]

Our patient also presented to us with acute infective exacerbation of COPD. His chest x ray, showed ill defined right lung consolidation which prompted us to evaluate further with a computed tomography of thorax. It was the computed tomography which revealed a very interesting pattern, that is “swiss cheese” appearance.

Conclusion

Our case shows a very interesting and a rare radiological pattern, which highlights the importance of computed tomography in the practice of a respiratory physician.

References

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