

Case Study

Radiological features of Right destroyed lungs syndrome with dextrocardia.

Abstract :

Chronic lungs disease such relapsed tuberculosis of the lungs could lead to complications that could alter the gross anatomy of a region of the body. Complications have been reported from chronic and relapsed lungs infections such as Mycobateruim tuberculosis, when they are not properly managed, Although our indexed case improved within a short time after admission.

The reported case was a rare complicated relapsed lungs tuberculosis. He was a 45 year old businessman who presented with history of chronic cough of 25 years duration with associated hemoptysis ,treated in the past for lung tuberculosis. He had clinical features and radiological features of destroyed right lung syndrome with dextro cardia following relapsed tuberculosis with possible superimposed infection. He was managed with category two regimen although did not complete his treatment in this facility.

Radiographic complications in the index case were mediastinal shift, gross distortion of the right lung with associated fibrosis ,contra-lateral lung emphysema which was noticed to compensate for the destroyed

right lung. These findings are strongly consistent with some other reports that artificial/pathologic dextrocardia can be as a result of relapsed tuberculosis with gross distorted chest region. Therefore, physicians should guide against relapsed tuberculosis by revamping direct observe treatment(DOT) through counseling ,as well as prevent transmission of multi-drug resistance tuberculosis through proper investigation.

Keywords: Destroy lungs syndrome, DOT, lungs tuberculosis.

Introduction :

Radiological presentation of destroyed lung syndrome as in the reported case is rare.^[1] worldwide , however, they are fairly^[1] present in developing nations where tuberculosis is still a rampaging infectious disease among its populace, even in this present days of DOTs.

Primary lung tumours, mediastinal masses, vascular abnormalities and various progressively destructive pulmonary infections such as Mycobacterium tuberculosis^[2,3] are considered to be the predominant causes unilateral lung destruction.^[4,5,6,7,8,9]

Case report:

Mr E I , was a 45 year old businessman who presented through the accident and emergency department with history of cough of 25years duration ,and hemoptysis which started 2 weeks ago, with several and recurrent episodes for the past three days . Few days before admission, He had sputum smear screened for acid-fast bacilli, performed at a tuberculosis referral centre. Result was negative for all three smears.He had been diagnosed twice for tuberculosis in the past and treated with anti-tuberculosis drugs twice as well. One of the course lasted for 8 months using category 1 therapy in 2009 . A year later, he presented with the above clinical presentation.

On examination he was cachetic, orthopneic, weak, he had features of right pleural effusion ,with fibrosis (tracheal deviation to the right, while auscultation of heart sound was on the right side of the chest. The patient

was clinically assessed as a case of destroyed lungs syndrome and dextro-cardia secondary to relapsed tuberculosis with super-imposed infection.

He had x-ray film taken and reported on 2nd day post admission.^[figure 1] Report revealed silhouette sign, indeterminate cardiac size, complete loss of normal cardiac /mediastinal outline, complete mediastinal shift to the right due to collapse of the right lung ,and thickened chest wall. Inhomogeneous opacities of right lung field (mid and basal lung zones) was noted. There was consistent finding of right upper and middle lobe lung collapse .Ipsilateral apex is devoid of lung marking with air/fluid level thus hydropneumothorax. There was feature of compensating emphysema of the left thoracic lung, focal cavitation and wide spread streaky changes worse in the upper lung zone, thoracic cage was intact. Pleural tap of 4mls of bloody fluid was collected in 5ml syringe while in emergency unit ,smear showed few lymphocyte with fungal hyphae ,probably contaminant ,no malignant cell seen ,therefore malignancy was ruled out.

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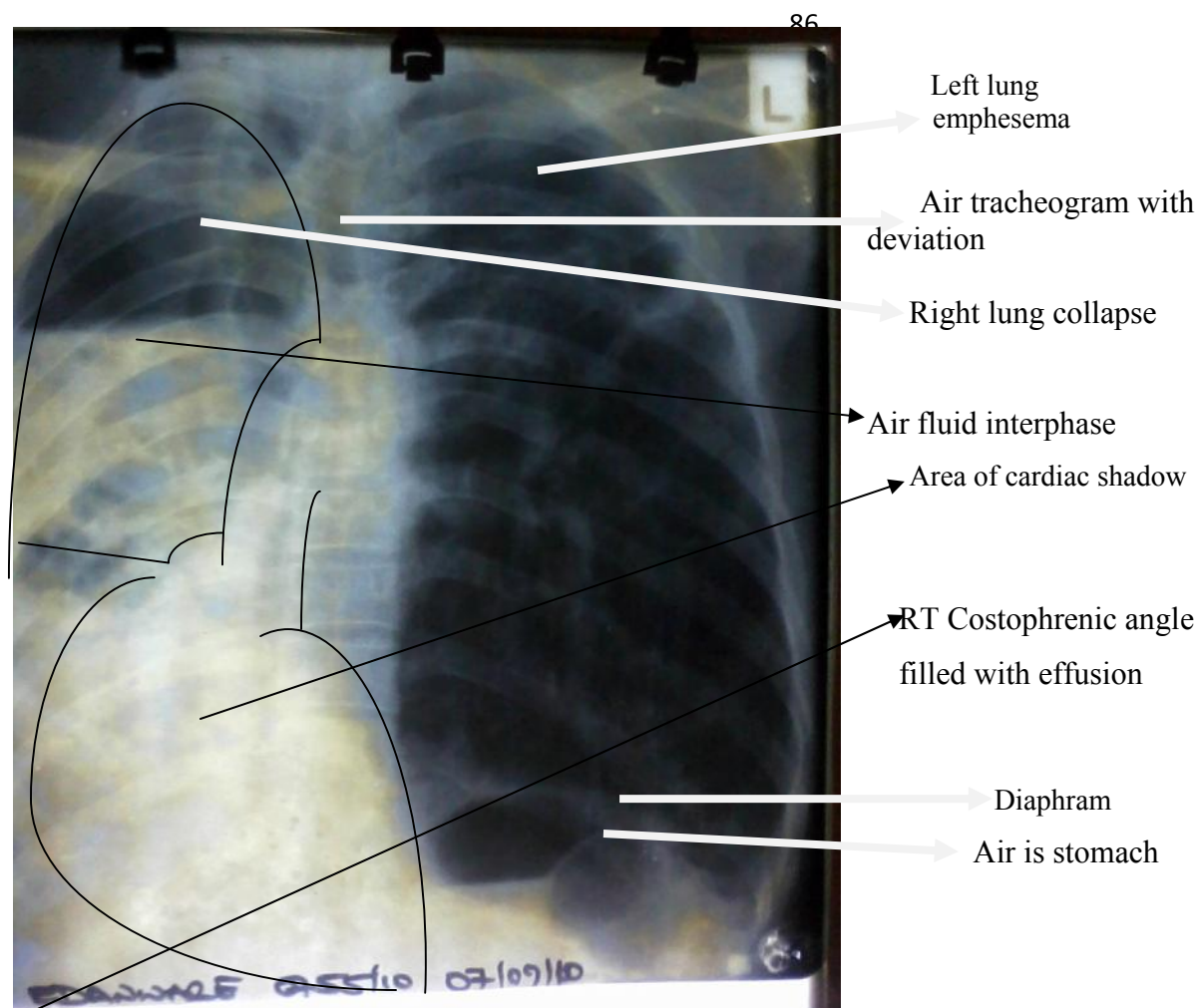


Figure 1:Second day film of destroyed left lung syndrome

His full blood count showed packed cell volume of 24%, white blood cell count of 79×10^9 cells/L. Among the white blood cells, neutrophil and lymphocyte consist 75 and 24 percents respectively, which was reported seventh day later, after admission. HE was transfused with 2 units of sedimented blood cells and 1 unit of whole blood. He was placed on category 11 anti tuberculosis therapy. A combination therapy consisting Rifampicin, Isoniazid , Pyrazinamide and Ethambutol. Three

tablets of these combination daily was administered as well as intramuscular streptomycin, (0.75g) 1.5mls in accordance with his weight estimation. streptomycin was taken three times in a week, at least alternate days. He had his medications for 8 days before referral to another centre to continue his medications for close proximity. Before he left, the severity of orthopnoea, dyspnoea and cough had drastically reduced.

A repeat X-ray film^[figure2] of the chest performed 14 days later, showed silhouette sign with associated inhomogeneous opacities and cavitations within the right lungs field. Features were consisted with right lung collapse, especially the mid and lower lobes. There was obliteration of the right costophrenic and diaphragmatic angle with effusions but reduced as compared to previous X-ray film^[fig 1]. The left lung field was spared and bony thorax was intact.

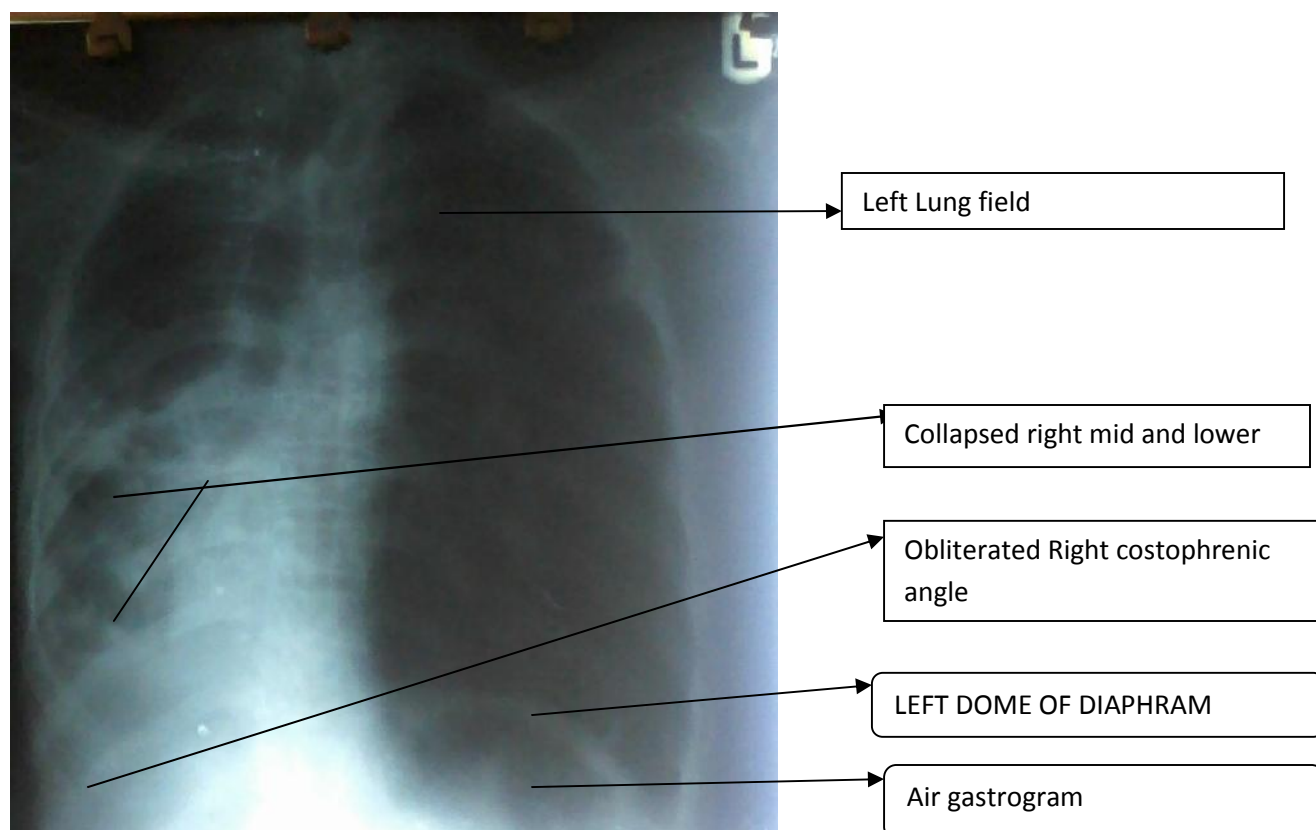


Figure2; Resolving Pleural effusion
Taken 20/9/10

Discussion:

Destroyed lungs syndrome is one of the morbidity of relapsed lungs tuberculosis, and commonly affect the left^[1] because of its anatomical characteristics. Adefuye et al^[1] demonstrated in a poster presentation, that destroyed lung syndrome could involve the right lung rather than the left lung which was the same with the reported case. A clinical study^[2] that was carried out between January 1996 and December 1997, showed that of Five hundred newly diagnosed cases of Pulmonary Tuberculosis that were treated with directly observed short-course

154 treatment(DOT).Hundred of them had chest radiographic examination
 155 done. Cases of destroyed lung syndrome stands at 5(5%),while 80%
 156 where in HIV sero-positive patients. This fact proves that the reported
 157 complication is not a common phenomenon and is more associated with
 158 HIV sero-positive patients rather than sero-negative patient. The index
 159 case was HIV sero-negative. Moreover there was fibrosis in the right
 160 lungs field as confirmed in the x-ray film. This complication was noticed
 161 in my client as well. The reviewed study^[2] stated that 70% of studied
 162 films had fibrosis in about 57.1% patients which were sero-negative.
 163 Other complications seen in the reported patients were pleural effusion ,
 164 contra-lateral emphysema with cavitation .The listed complications in
 165 the reported patient showed some of the radiographic patterns as
 166 reported by Dosumu^[2] in 2005 .Obviously, the patient did not have
 167 congenital situs-inversus because even on the both X-ray-film ,the
 168 stomach lies in the left side of the film as proven by the lucency of
 169 gastric air bubble , therefore congenital situs-inversus was ruled out.
 170 Detection of destroyed lung are quite easy ,beginning from clinical
 171 examination of the patient which may reveal heart sounds on contra-
 172 lateral side, increased tympanicity of the compensating lung zone. Other
 173 investigations that can be carried out are chest X-ray^[fig1&2] and
 174 computed topography^[3].

175 The presence of fibrosis , mediastinal shift to the right, contra-lateral
 176 left compensatory emphysema and right sided tracheal deviation in the

177 patient ,are strong clues for the possible cause of the pathologic
 178 dextrocardia demonstrated by the absence of cardiac shadow on the left
 179 side of both radiographic films ^[fig1&2]. Therefore, the hypothetical
 180 pathologic process that followed as aftermath of chronic lung
 181 parenchyma disease could be described as thus; Lung collapse resulted
 182 from air leak into intra-thoracic space which has negative pressure
 183 followed by fibrosis formed from scar tissue of destroyed air sacs, lung
 184 tissue and capillaries ,then next to follow is tracheal deviation and
 185 mediastinal shift due to contracted fibrous tissue. Dosumu^[2] went further
 186 stating that upper lung lobes are affected by tuberculosis other rather
 187 than the lower lobes ,as seen in the patient .However the left lung is
 188 reported¹ to be more affected in destroyed lung syndrome due to the
 189 anatomical structure of the left main bronchus, but for the index
 190 patient radiographic film shows otherwise. Pleura tap of the reported
 191 showed no malignancy, but reported that there was fungal hyphae as
 192 contaminant. It could be possible that there was fungal infection which
 193 was part of the pathology the lung. Other reports^[3,10] have notice fungal
 194 infection following pulmonary tuberculosis, and that surgery is a viable
 195 treatment option. Example of surgical options for destroyed lungs^[5]from
 196 chronic infections such as pulmonary tuberculosis^[10] and
 197 Aspergilosis^[10] are thoracostomy with chest tube insertion and
 198 pneumonectomy^[10]. This may be considered as options where

conservative management and DOT fails putting into perspective, the clinical state of the respiratory system.

Conclusion:

The report clearly indicates that there should be a strong advocacy for multi-drug resistance testing¹ to strengthened DOTs and prevent recurrence, thereby reducing morbidity and mortality that may arise.

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