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Original Research Paper

General Medicine

# CASE OF CAPLAN SYNDROME AND OSTEOPOROSIS

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**ABSTRACT** Caplan Syndrome is an inflammatory reactive pulmonary condition to dust in a patient with Rheumatoid arthritis due to exposure to coal/silica/asbestos. It may be associated with any other diseases.

**SUMMARY:** A case of Caplan Syndrome in a 74-year-old female, known diabetic, know rheumatoid arthritis Patient, who presented with breathlessness and fever. Her X-ray showed unusual opacities on right side, and spine x-ray showed compression fracture of T10.Dexa scan was done. Patient was discharged from hospital after improving symptomatically. Thus, a diagnosis of Caplan syndrome and osteoporosis was done.

**KEYWORDS :** X-ray, Hrct, dexa scan

## INVESTIGATION

All baseline investigations where done. Haemoglobin was 12.9%, RBC 4.63 million/cumm, total counts of 16920cells/cumm, platelet count of 2.91lakh/cumm, Cpk (Total)was 51 I/U, C reactive Protein was 19.2mg/dl. CBG was elevated at 305mg/dl , RFT was within normal limits, Albumin was 3.0gm/dl, total protein was 5.3gm/dl, serum sodium was 135.4meq/l, LFT done showed mild drop in albumin of 3.0, anti CCP was done found to be elevated at 63.4, serum cortisol was sent and found to be as low as 3.4. ABG was done which revealed High Anion Gap Metabolic Acidosis with uncompensated Respiratory Alkalosis (pco2 37, ph 7.34, po2 102, Na 150, hco3 20.0). Saturation at that time was found to be 55%.

## RADIOLOGY

2D echo was done which should a normal ejection fraction of 66% with no regional wall abnormality. Chest X-ray showed unusual opacities on right side. These remained unaltered even after 4 days. Hrct Thorax was done which revealed findings of diffuse interstitium, involving the sub plural regions of bilateral lobes in the posterior basal aspect of the right lower lobe. Above features showed the possibilities of interstitial pneumonia. Patient also had benign compression fracture of T10 vertebra seen on X-ray spine.

## MANAGEMENT

Patient was given oxygen and as she had bilateral lower Limb cellulites she was started on antibiotics, ant emetics, diuretics, nebulisation, anti pyretics, steroids and other supportive medications. Cbg was monitored accordingly and insulin was given. In view of pathological fracture, dexa scan was done which showed diffuse osteoporosis... Patient symptomatically improved and was discharged.

## FOLLOW UP

Patient was advised for regular follow up.

## DISCUSSION

Caplan Syndrome is caused by breathing in of foreign materials like inorganic dust. This is dust that comes from grinding metals, silica, minerals, etc. After the foreign materials enter the lungs, it causes inflammation which can lead to the formation of many small indiscriminate masses in the lungs and an airway disease similar to mild bronchial asthma. It is believed there are two theories: 1) When people breathe in this inorganic dust, it affects their immune system and leads to autoimmune disorders like rheumatoid arthritis (RA). Rheumatoid arthritis is an autoimmune disease in which healthy body tissue attacks the body's immune system by mistake.2) When people who already have RA or are at high risk for it are exposed to mineral dust, they develop something known as Caplan syndrome.

Symptoms of this syndrome are cough, joint swellings, pain, lumps under the skin (rheumatoid nodules), shortness of breath, wheezing. These complications that can occur from Caplan syndrome are increased risk for tuberculosis and Scarring in the lungs (progressive massive fibrosis).

Occupational exposure to silica has been implicated in the development of autoimmune inflammatory diseases [1]. It was identified in 1953 by Dr Caplan [2] who described it as a disease which consists of multiple well-defined rounded nodules on chest X-ray, distributed throughout the lungs predominantly at the periphery [3]. Extra-articular sites can also be the target of co morbidities (e.g., cardiovascular (CV) manifestations) or of the damage induced by RA-related drugs (e.g., corticosteroid-induced osteoporosis), requiring therefore an accurate differential diagnosis [5]

Caplan syndrome is diagnosed by taking a complete history, physical examination, lab tests and x-ray. In X-ray we can see many, round, well defined nodules, generally 0.5-2.0 cm in diameter. Lab tests shows Rheumatoid factor, antinuclear antibodies positive with elevated ESR and CRP. The polyarthritis in Caplan's syndrome is in the majority of cases with a positive ACPA [4] Osteoporosis is defined as reduction in bone strength resulting in increased incidence of fractures it is generally seen in post menopausal women Chronic inflammatory diseases like rheumatoid arthritis increases the chance of osteoporosis For osteoporosis the best screening test is dual energy X-ray absorptiometry (DEXA) – which measures the density of the bones in spine, hip and wrist and it's used to accurately follow changes in these bones over time The joint inflammatory process of RA is triggered by cytokines produced by activated macrophages. These cytokines, which are clearly implied in RA development and maintenance of inflammatory process, such as IL-1 and TNF, are detected in high concentrations in the synovial membrane, synovial liquid.

Pleural effusion, pulmonary nodules, pulmonary hypertension and pulmonary arthritis are the differential diagnosis of Caplan syndrome.

There is no treatment for Caplan syndrome but all exposure to coal dust/silica etc must be stopped, and complete smoking cessation should be done. If tuberculosis has been excluded, steroid is used. Rheumatoid arthritis should be treated early

e.g. with use of DMARDs (Disease-modifying antirheumatic drug)

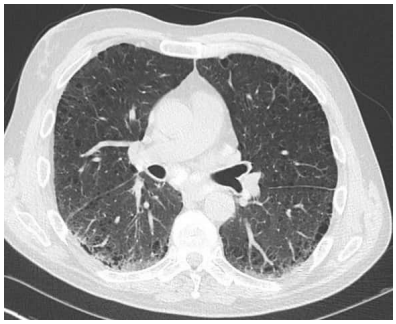

**Figure 1 Hrct**

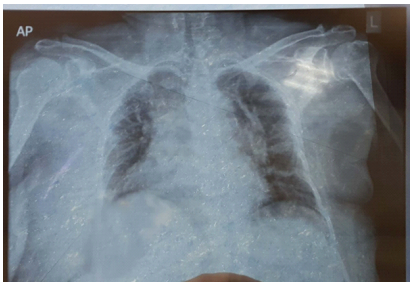


**Figure 2 Chest X-Ray showing intra pulmonary nodules**

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