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RESEARCH ARTICLE

PULMONARY COCCIDIOIDOMYCOSIS IN AN INDIAN IMMUNOCOMPETENT PATIENT.

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Abstract

Introduction: coccidioidomycosis commonly known as “valley fever” is a dimorphic soil dwelling fungus of genus coccidioides and exists in two species *c.immitis* and *c.posadasii*. It is endemic to American continent including USA, Mexico, Brazil, Argentina and Colombia.

Case Details: A 33 years Indian male who is welder by occupation came from Mexico to our hospital with chief complaints high grade fever, persistent dry cough, 3 episodes of blood tinged sputum for about 10 days which increased in last 4 days. He developed all these symptoms there only and when not relieved with medication came back to India. There was no weight loss. No H/o TB/COPD/asthma. No pets exposure, No pallor/lymph nodes/cyanosis, No skin rash/arthritis/urticarial No sneezing/headache Occasional H/o forest trekking was present. No relevant past history, No occupational exposure of dust, fumes. Vitals at the time of admission were, BP 110/80mm Hg, Pulse 78/min, Temp 100F, SpO2 99% room air. Positive findings on examination were bronchial sound with crackles on left side chest in infrascapular area.

On investigations TLC 11600 esr 31 RBS 128, HbA1C 6.1, HIV 1 & 2 negative, Mantoux test negative, chest x ray showed left lower zone consolidation with cavity. His sputum sample was not available because the patient is having persistent dry cough so CECT chest was done which showed left lower lobe cavity with paratracheal and subcarinal lymphadenopathy without necrosis and calcification, and mild thick walled cavitory lesion of 45 x 35 mm involving laterobasal segment of left lower lobe lung with associated ground glass haze and air spaces infiltrates –findings consistent of infective etiology. Bronchoscopy showed normal anatomy on both sides. BAL fluid microscopy on cytospin smear showed reactive columnar and squamous epithelial cells, alveolar macrophages, few neutrophils, lymphocytes and mucoid cells and no frank malignant cell. His BAL culture, AFB, nocardia negative, gene expert and BAL fungal culture were negative, USG chest showed minimal left pleural effusion (non-tappable).

He was treated with iv antibiotics and other supportive measures and discharged when symptomatically better and followed regularly in OPD for 5-10 days. But patient was having persistent chest pain and

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left lower zone consolidation in chest x ray. So, In view of negative culture reports, CT guided lung biopsy was done and tissue sample was sent for HPE which showed coccidiomycosis in the lesion. He was again admitted for iv liposomal amphotericin B. After 7 days, lesions started resolving, after 2 weeks cavity vanished and he was symptomatically better, pain and cough decreased. Patient was discharged with fluconazole 200mg bd per orally and was improved. chest x ray cavity completely resolved.

Conclusion: Coccidioidomycosis is commonly misdiagnosed as community acquired bacterial pneumonia. Health care providers should consider coccidioidomycosis when evaluating persons with pneumonia who live in or have travelled to endemic areas.

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Introduction:-

A 33 years indian male came from Mexico to our hospital with chief complaints high grade fever, persistent dry cough with occasional sputum, 3 episodes of blood tinged sputum for about 10 days which increased in last 4 days. He is a welder in Mexico. He developed all these symptoms there only and when not relieved with medication came back to India. There was no weight loss No h/o TB/COPD/asthma. No pets exposure, No pallor/lymph nodes/cyanosis, No skin rash/arthralgia/urticarial No sneezing/headache Occasional h/o forest trekking was present. No relevant past history, No occupational exposure of dust, fumes. Vitals at the time of admission were, BP 110/80mm Hg, Pulse 78/min, Temp 100F, Spo2 99% room air. Positive findings on examination were bronchial sound with crackles on left side chest in infrascapular area.

Workup/Investigations:-

On investigations HB 15.1 tlc 11600 esr 31 platelet 194000 urea 9.4 creatinine 0.8 sodium 138 potassium 4.8 bilirubin 0.36 albumin 3.4 RBS 128, HBA1C 6.1, HIV 1 & 2 negative, mantoux test negative, chest x ray showed left lower zone consolidation with cavity. His sputum sample was not available because the patient is having persistent dry cough so CECT chest was done which showed left lower lobe cavity with paratracheal and subcarinal lymphadenopathy without necrosis and calcification, and mild thick walled cavitary lesion of 45 x 35 mm involving laterobasal segment of left lower lobe lung with associated ground glass haze and air spaces infiltrates – findings consistent of infective etiology. bronchoscopy was done which showed normal anatomy on both sides., subsequently TBNA and BAL taken. BAL fluid microscopy on cytospin smear showed reactive columnar and squamous epithelial cells, alveolar macrophages, few neutrophils, lymphocytes and mucoid cells and no frank malignant cell. His BAL culture was sterile, AFB negative, nocardia negative, gene expert negative, BAL fungal culture negative, USG chest showed minimal left pleural effusion (non tappable).

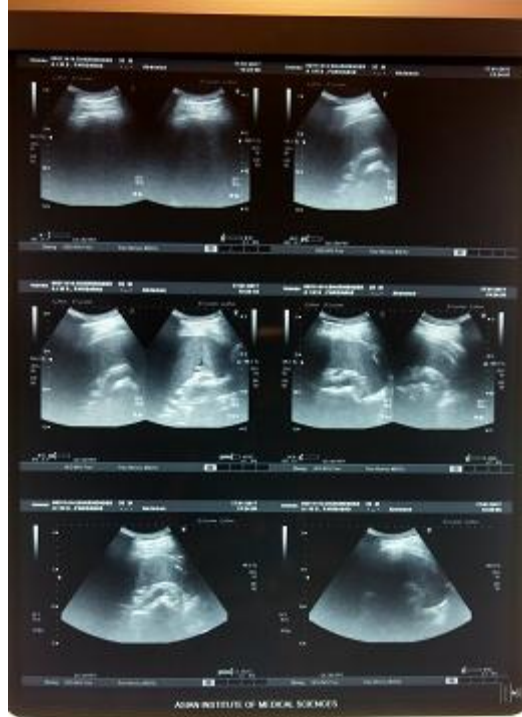
He was treated with iv antibiotics and other supportive measures and discharged when symptomatically better and followed regularly in OPD for 5-10 days. But patient was having persistent chest pain and left lower zone consolidation in chest x ray. So, In view of negative culture reports, CT guided lung biopsy was done and tissue sample was sent for histopathological examination which showed coccidimycosis in the lesion. He was again admitted for iv liposomal amphotericin B. After 7 days, lesions started resolving, after 2 weeks cavity vanished and he was symptomatically better, pain and cough decreased. Patient was discharged with fluconazole 200mg bd per orally and doing better and chest x ray cavity completely resolved.



CXR SHOWING LEFT LOWER PATCH WITH CAVITARY LESION IN CENTRE



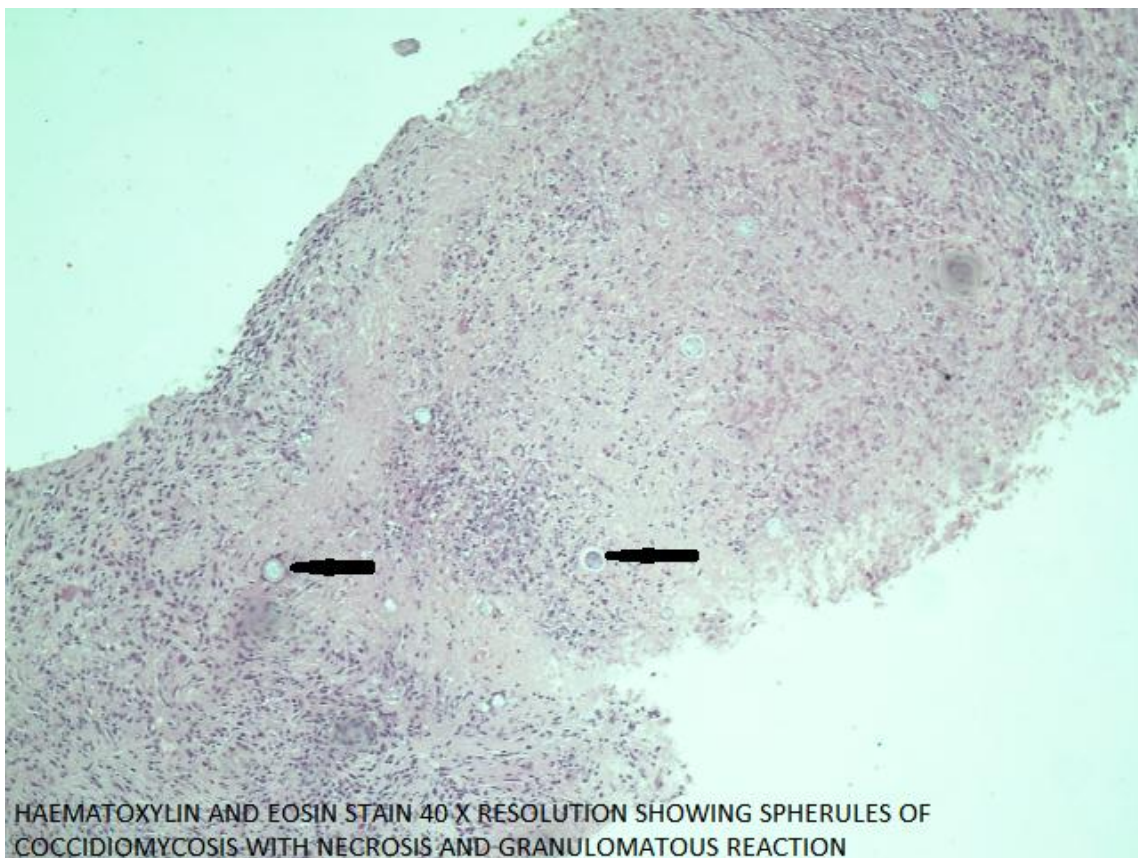
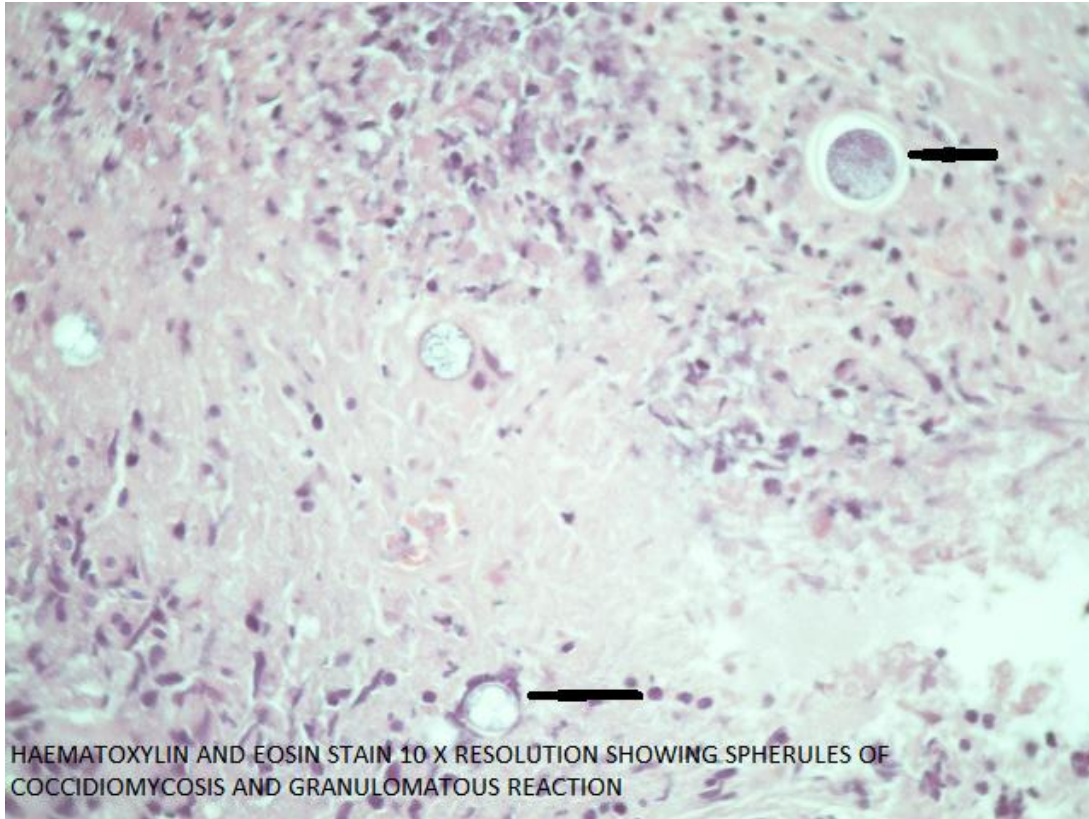
CXR SHOWING LEFT LOWER ZONE CAVITARY LESION SURROUNDED BY CONSOLIDATION

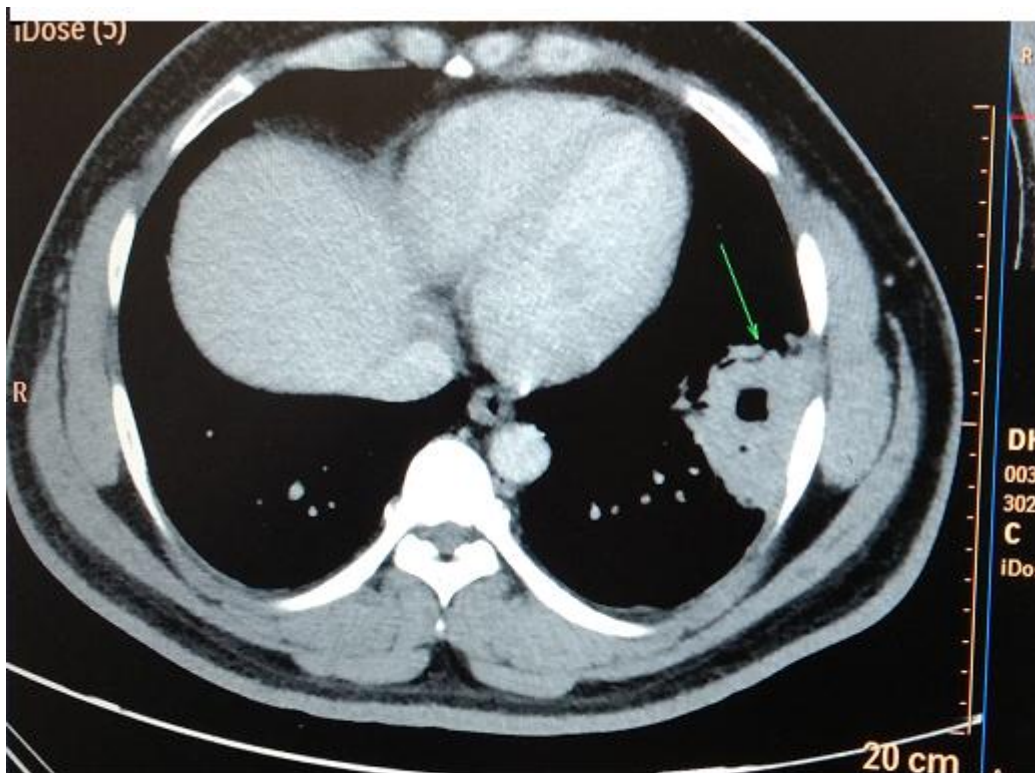
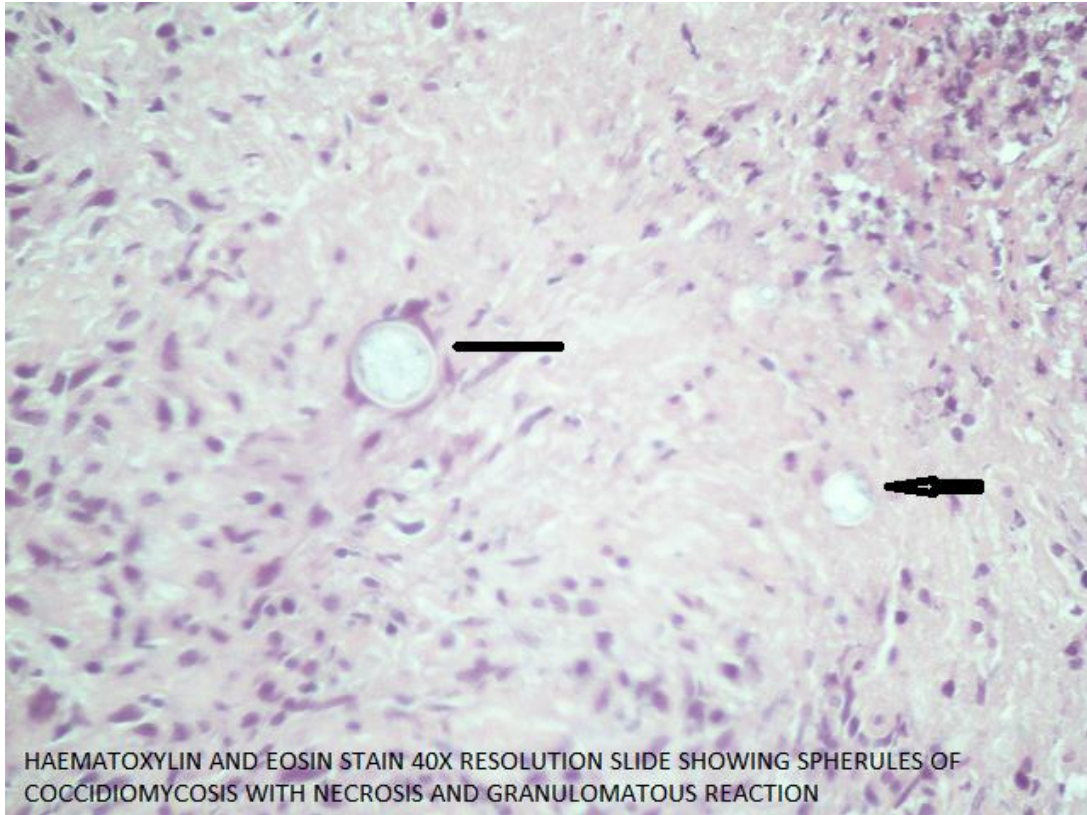


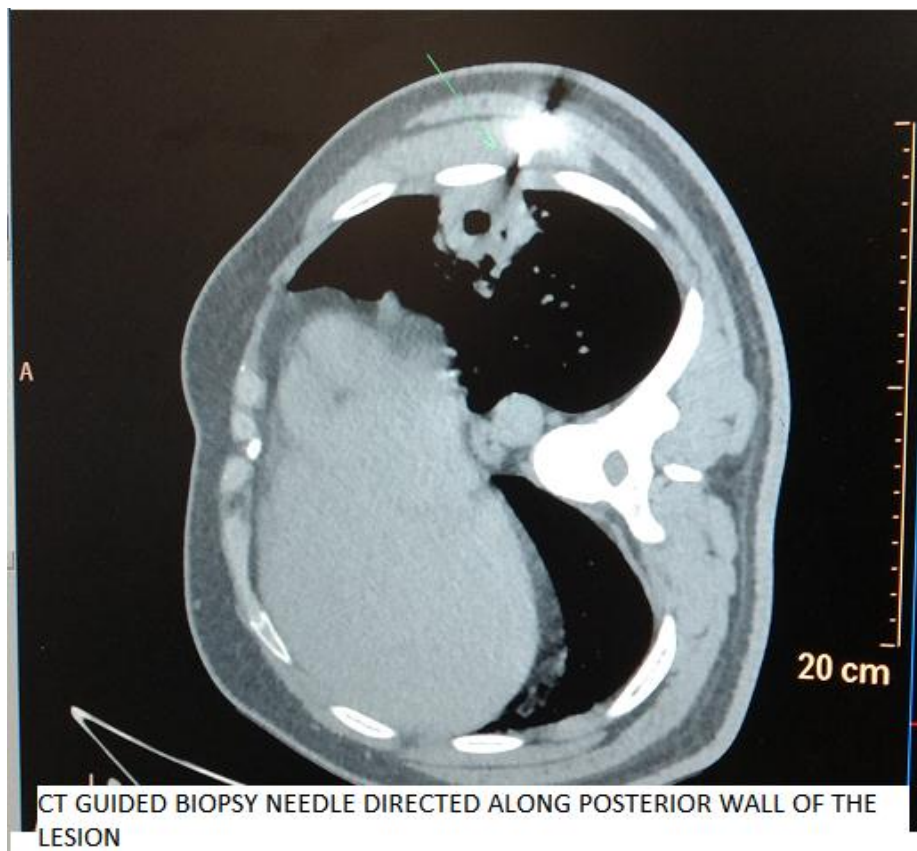
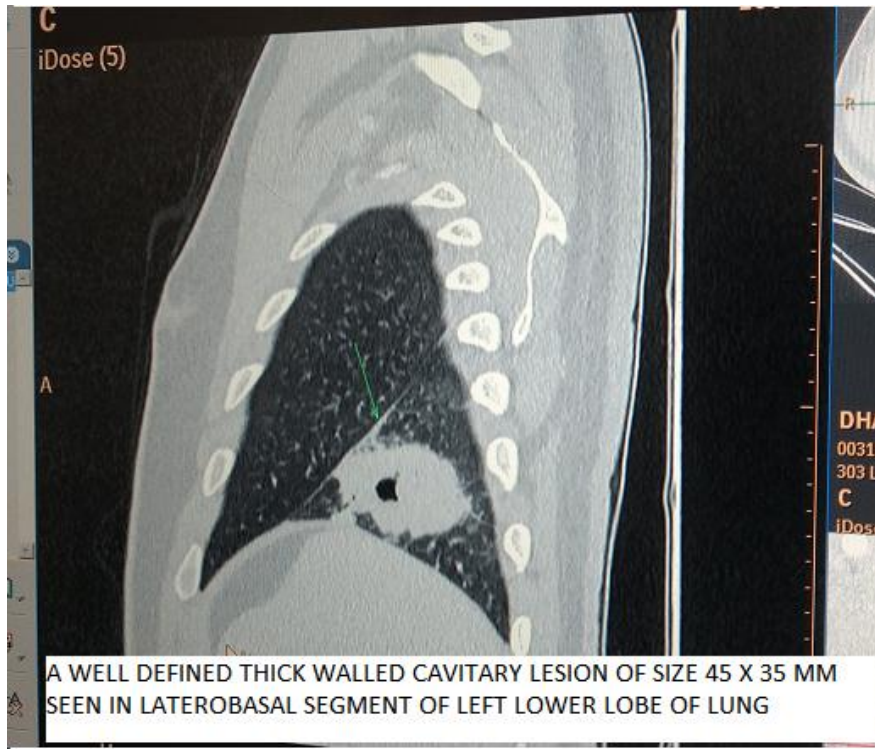
USG CHEST SHOWING LEFT MINIMAL PLEURAL EFFUSION

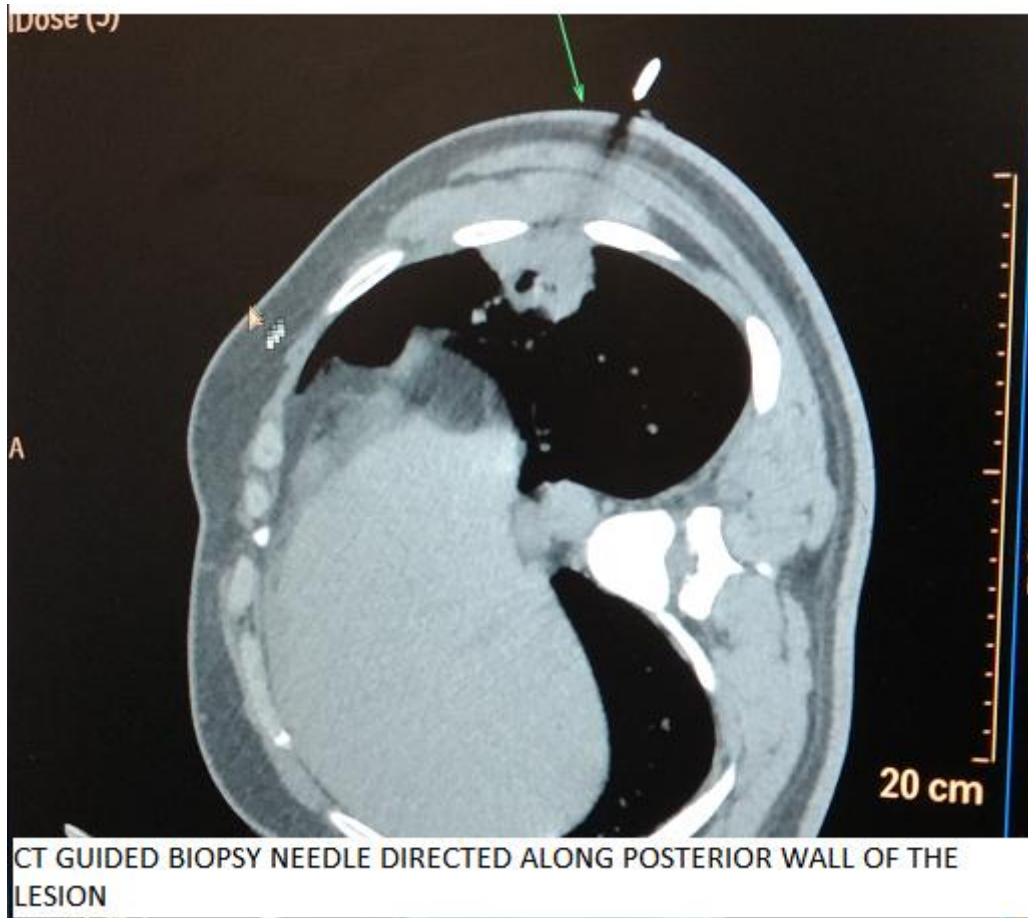


CXR SHOWING PATCH ON LEFT SIDE DECREASED AND CAVITARY LESION RESOLVED









Discussion:-

Coccidioidomycosis commonly known as “valley fever” is a dimorphic soil dwelling fungus of genus coccidioides and exists in two species *c.immitis* and *c.posadasii*.it is endemic to American continent including USA, mexico,brazil,argentina and Colombia.it increases in frequency during aridity following rainy seasons.it is a filamental mold which form spherules from anthroconidia which are characteristic of coccidioides.necrotizing granulomas containing spherules are typically identified in patients with resolved pulmonary infection.in disseminated disease,granulomas are generally poorly formed or do not develop at all,and a polymorphonuclear leukocyte response occurs frequently.in patients who are asymptomatic or in whom the initial pulmonary infection resolves ,delayed type hypersensitivity to coccidioidal antigens has been routinely documented.60% patients are completely asymptomatic and rest may have symptoms like fever,cough and pleuritic chest pain .other manifestations like arthralgia,erythema nodosum or peripheral blood eosinophilia and hilar or mediastinal lymphadenopathy occurs.in less than 10% patients pleural effusions occur and coccidioides is rarely grown from such effusions.in most patients,primary pulmonary coccidioidomycosis usually resolves without sequelae in weeks.pulmonary nodules are residua of primary pneumonia are present in upper lobes mostly and ≤ 4 cm in diameter in which calcification is a rare event.

Coccidioidal pulmonary nodules can be difficult to distinguish radiographically from pulmonary malignancies and routine CT often demonstrates multiple nodules in coccidioidomycosis and often a biopsy is needed to distinguish between these two conditions .

Pulmonary cavities occur when a nodule extrudes its contents into the bronchus,resulting in a thin walled shell .these cavities can be associated with persistent cough,hemoptysis and pleuritic chest pain in some cases,primary pneumonia presents as a diffuse reticulonodular pulmonary process in association with dyspnea and fever.primary diffuse coccidioidal pneumonia may occur in settings of intense environmental exposure pr profoundly suppressed

cellular immunity like AIDS ,organ transplant patients,cancer,diabetic,chronic glucocorticoid therapy receiving patients.chronic dissemination outside the thoracic cavity occurs in fewer than 1% of infected individuals .women who acquire infection during the second or third trimester of pregnancy also are at risk for disseminated disease .common sites for dissemination include the skin,bone,joints,soft tissues and meninges.

Clues that suggest a diagnosis of coccidioidomycosis include peripheral blood eosinophilia,hilar or mediastinal adenopathy on radiographic imaging ,marked fatigue ,and failure to improve with antibiotic therapy.serology plays an important role in establishing a diagnosis of coccidioidomycosis.beacause of its commercial availability,the coccidioidal EIA is frequently used as a screening tool for coccidioidal serology .coccidioids grows within 3-7 days at 37°C n a variety of artificial media including blood agar.for fixed tissues that are obtained from biopsy specimens, spherules with surrounding inflammation can be demonstrated with hematoxylin eosin or gomori methenamine silver staining.

Currently,two main classes of antifungal agents are useful for the treatment of coccidioidomycosis.triazole antifungals like fluconazole,itraconazole,posaconazole and voriconazole.evidence indicates that itraconazole may be more efficacious against bone and joint disease.because of its demonstrated penetration into CSF ,fluconazole is the azole of choice for the treatment of coccidioidal meningitis ,but itraconazole also is effective.for both drugs,a minimal oral adult dosage of 400mg/d should be used .the maximal dose of itraconazole is 200mg three times daily,but higher doses of fluconazole may be given.these azoles are teratogenic during the first trimester of pregnancy thus,amphotericin B should be considered as therapy for coccidioidomycosis in pregnant women during this period .

Amphotericin B in all its formulations is now reserved for only the most severe cases of dissemination and for intrathecal or intraventricular administration to patients with coccidioidal meningitis in whom triazole antifungal therapy has failed.the amphotericin B deoxycholate is administered intravenopusly in doses of 0.7-1 mg/kg either daily or three times per week whereas the less nephrotoxic lipid formualtions of amphotericin B is given at doses of 5mg/kg daily or three times per week.

Most patients with focal primary pulmonary coccidioidomycosis require no therapy.the nodules that may follow primary pulmonary coccidioidomycosis do not require treatment.most pulmonary cavities do not require therapy.antifungal treatment should be considered in patients with persistent cough,pleuritic cough,pleuritic chest pain and hemoptysis.for chronic pulmonary coccidioidomycosis prolonged antifungal therapy-lasting for atleast 1 year is usually required with monitoring of symptoms,radiographic changes,sputum cultures , and serologic titres.most cases of disseminated coccidioidomycosis require prolonged antifungal therapy.such therapy routinely is continued for at least several years.relapse occurs in 15-30% of individuals once therapy is discontinued.

Conclusion:-

Coccidioidomycosis is commonly misdiagnosed as community acquired bacterial pneumonia .Health care providers should consider coccidioidomycosis when evaluating persons with pneumonia who live in or have travelled to endemic areas.

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