Abstract: Chest skiagram with infiltrates is one of the most commonly encountered problem in the thoracic medicine department. While there are innumerable differential diagnosis for that, community acquired pneumonia is one of the frequent cause. While most of them resolve with or without treatment some might pose a diagnostic challenge after empirical treatment or even after initial investigative modalities. We present here one such situation where 2 different individuals who presented with similar complaints but ultimately turned out to be two different spectrum of disorders.

Keyword: Non resolving pneumonia, community acquired pneumonia, chest skiagram.

INTRODUCTION
The diagnosis of pneumonia is often imprecise and treatment is often empirical, only rarely is a causative pathogen identified. This lack of certainty results in a dilemma that how long should the physician wait before evaluating non resolving or slowly resolving pulmonary infiltrates in patients receiving antibiotics for suspected community acquired pneumonia . If the consolidation fails to resolve with appropriate therapy, other entities need to be considered. Several types of infectious and noninfectious conditions can cause a nonresolving pulmonary infiltrate, including inadequately treated bacterial pneumonia, infections with unusual organisms and other noninfectious mimics of pneumonia 7.

CASE REPORT
Case 1: A 24 year old unmarried female who worked in an aquarium shop presented with fever, cough with expectoration, breathlessness grade 3 MMRC, for one month. She was evaluated for the same complaints in the recent past, but showed no clinical improvement. Complete haemogram and blood biochemistry were normal. Chest imaging showed homogeneous opacification with air bronchogram silhouetting the right heart border. Sputum for Acid fast bacilli(AFB) was negative. Fiber optic bronchoscopy was done which showed a nodule on the medial wall of right intermediate bronchus. Bronchial wash for cytology revealed granulomatous lesion suggestive of tuberculosis. Patient was started on anti tuberculosis treatment. Patient showed both clinical and radiological improvement on subsequent follow up.
Bronchoscopy shows a nodule on medial wall of intermediate bronchus (21.02.2011)

Case 2: A 40-year-old male, watchman by occupation, non-smoker, presented with loss of weight and loss of appetite for 3 months, fever and cough with scanty mucoid expectoration for 20 days. He was treated for the same complaints in a private hospital but there was no clinical improvement. Complete haemogram and blood biochemistry was normal. Sputum for acid fast bacilli was negative. Sputum for gram stain showed few gram positive cocci. Chest skiagram showed right hilar prominence and homogeneous opacity silhouetting right heart border. Fiber optic bronchoscopy was done, which revealed 2 nodules within 2 cm of the carina and 1 nodule over the carina. Bronchial wash for AFB was negative. Bronchial wash for cytology was suspicious of malignancy. Bronchial brushings was done, which was positive for non small cell carcinoma. Patient was started on cisplatin based palliative chemotherapy, since he was stage 4 non small cell carcinoma.

Chest X-ray shows right hilar prominence with homogenous opacity silouetting right heart border (11.01.2011)

Chest X-ray shows non resolution of opacity after 1 month (14.02.2011)

DISCUSSION OF THE CASES

Our reports show two causes of non resolving pneumonia namely, tuberculosis and bronchogenic carcinoma. Tuberculosis should always be considered as a cause of non resolving pneumonia in an endemic country like ours. However the atypical presentation in chest x-ray and the absence of typical constitutional symptoms of tuberculosis increases our dilemma. Furthermore even the bronchial wash was negative for acid fast bacilli. Endobronchial biopsy was needed to establish the diagnosis. The patient responded well to anti tuberculosis treatment. Our second case is a 40 yr old non smoker with no constitutional symptoms, who had lower zone involvement with no evidence of immuno suppression. This made tuberculosis etiology unlikely. We resolved to bronchoscopy, which allowed us visualization of the airways, where there were multiple nodules. Bronchial wash clinched the diagnosis for us. Lancet Pinto et al published a similar case of non resolving pneumonia in 12 year old female who had treatment failure in spite of multiple courses of antibiotics and a course of anti tuberculosis treatment. Subsequent bronchoscopic examination in that patient showed a nodule in the left bronchus. Histopathological examination of the biopsy turned out to be Hodgkins lymphoma. In both our cases bronchoscopy has helped in the evaluation of non resolving pneumonia. Although both cases had nodules in endo bronchial visualization, Bronchial wash cytology provided 2 different etiologies, thus clinching the diagnosis for treatment failure in our patients. The use of bronchoscopy in cases of non resolving pneumonia, achieved diagnostic yield of 52%.

DISCUSSION OF THE LITERATURE DEFINITION:

Nonresolving Pneumonia:
It is a clinical syndrome in which focal infiltrates clearly begin with some clinical association of acute pulmonary infection (that is fever, expectoration, malaise, and/or dyspnoea) and do not resolve in the expected time despite a minimum of 10 days of antibiotic therapy and failure of radiographic opacities to resolve within 30 days of initial clinical response.

Slowly Progressive Pneumonia:
It implies response to antibiotic therapy, but in a period considered excessively long.

Progressive Pneumonia:
It refers to radiographic abnormalities and clinical deterioration during 1st 72 hours of antibiotic therapy.

Non Responding Pneumonia:
It refers to absence of clinical response to antibiotic treatment after 3 to 5 days.

Causes ForNon Resolution:
The causes for nonresolution of radiographic infiltrates are complications associated with pneumonia, host factors, delayed radiological clearance, unusual organisms, lapse in defense, diseases mimicking pneumonia.

Complications:
Complications responsible for nonresolution are empyema, parapneumonic effusions, metastatic focus of infections like Infective endocarditis, superinfections.

Host factors:
Advanced age, comorbid illnesses like Diabetes mellitus, COPD, malignancy, HIV, Alcoholism, Immunosuppressive therapy, Cytotoxic drugs, bacteremia, Immune status is a critical determinant of the natural history of pneumonia.

Unusual Organisms:
Unusual organisms responsible for non resolution are Mycobacterium tuberculosis, Nocardia, Atypical mycobacteria, Fungi like Aspergillus, Cryptococcus, Mucormycosis, Histoplasmosis. While traveling to endemic areas Hanta virus and paragonimus are responsible for nonresolution
Lapse in Defense:
Impaired cough, Impaired mucociliary transport, Tracheostomy, Endotracheal tube, decreased function of alveolar macrophages, Immunoglobulin and complement deficiency.

Diseases mimicking pneumonia:
Non infectious diseases like Broncho alveolar cell carcinoma, Lymphoma, Lymphangitis carcinomatosa. Inflammatory diseases like Wegeners granulomatosis, churgstrauss syndrome, Connective tissue disorders, Eosinophilic pneumonia. Drugs like Nitrofurantoin, Amiodarone, Methotrexate, Cyclophosphamide, Bleomycin.

Evaluation Of Non Resolving (Or) Pneumonia:
A judicious approach is warranted for evaluation of non resolving pneumonia. In patients who improve clinically, but radiographic abnormalities have at least partially resolved by 6 weeks, a conservative approach is appropriate. In contrast more aggressive approach is indicated in patients who do not improve clinically (or) in patients who are asymptomatic but have deteriorating (or) persistent radiographic abnormalities at 6 weeks

Non Invasive Methods:
Serology or Urinary Antigen Assay for Legionella will be useful as a diagnostic modality for Legionella infection. Tuberculin skin testing and sputum smears and cultures for acid fast bacteria will be useful in patients with risk factors or clinical features suggestive of Mycobacterium Tuberculosis. Marked peripheral blood eosinophilia suggests Chronic Eosinophilic Pneumonia or Churg Strauss Syndrome. Hematuria or overt renal failure mandates evaluation for immune-mediated disorders (e.g., vasculitis, Goodpasture’s syndrome). Extrapulmonary features or multiorgan involvement should heighten the suspicion for immune-mediated etiologies. In these instances, serologies (serum autoimmune antibodies) should be obtained. Chest X Ray will be useful to diagnose associated pleural effusion, cavitation in tuberculosis and fungal infections. Presence of pleural involvement in Nocardia, Actinomycosis and Mycobacterium Tuberculosis may be evaluated with chest x ray. CT chest will be useful in excluding non infectious causes, obstructed endobronchial lesions and for detailed study of parenchyma, interstitium, pleura and mediastinum.

Invasive Methods:
If the non invasive methods are inconclusive, invasive methods like Fibreoptic Bronchoscopy with Broncho Alveolar Lavage should be performed. BAL is evaluated for (i) smears and cultures for bacteria, fungi. Mycobacteria and protozoans (ii) cytology for Pneumocystis carinii and Mycobacteria (iii) direct fluorescence antibody for Legionella (iv)differential cell count for lymphocyte predominance or eosinophilia Transbronchial biopsy should be done if the airway examination is normal without an explanatory anatomic finding (e.g. endobronchial lesion, extrinsic compression, suggestion of right middle lobe syndrome) and no evidence of infection (e.g. absence of purulent secretions). Biopsies can differentiate infections due to Mycobacteria of fungi from non infectious etiologies. If Transbronchial biopsies are equivocal, surgical (open or Video Assisted Thoracoscopic Surgery) biopsy is necessary to diagnose non resolving pneumonias. If systemic findings are present, biopsy of the involved extra pulmonary site may be preferred.

References: