Case Report

Recurrent pneumonia as an initial presentation in Acute leukemia

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Introduction

Recurrent pneumonia always is a warning signal to search for any immune deficiency in the host. Here we report recurrent pneumonia in a Diabetic. Further probing revealed a secondary cause for immune deficiency. A 65 year old farmer, diabetic presenting with recurrent pneumonia had underlying Acute T cell leukemia.

Case Report

A sixty five year old farmer, diabetic with no history of any addictions presented to our outpatient department with complaints of cough with scanty mucoid sputum of 2 months duration, Grade 1 dyspnoea on exertion (DOE) for 1 week with associated loss of appetite. Physical examination revealed pallor and atrophic glossitis with normal systemic examination. His chest X ray (CxR) revealed (Fig1) a homogenous opacity in the right mid zone and a doubtful nodule in the left lower zone abutting lateral chest wall. A hemogram done at the onset of symptoms showed leucocytosis (Total Count-14000/cumm), anemia (Hemoglobin (Hb) 8.1gm%) with elevated ESR (142 mm in 1 hour).

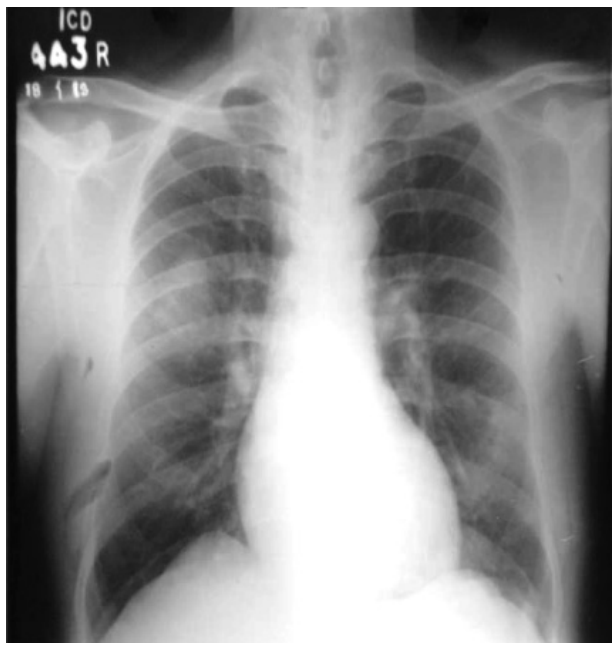

Fig. 1

Patient was managed with antibiotics on outpatient basis. Considering the possibilities of infection, ma-

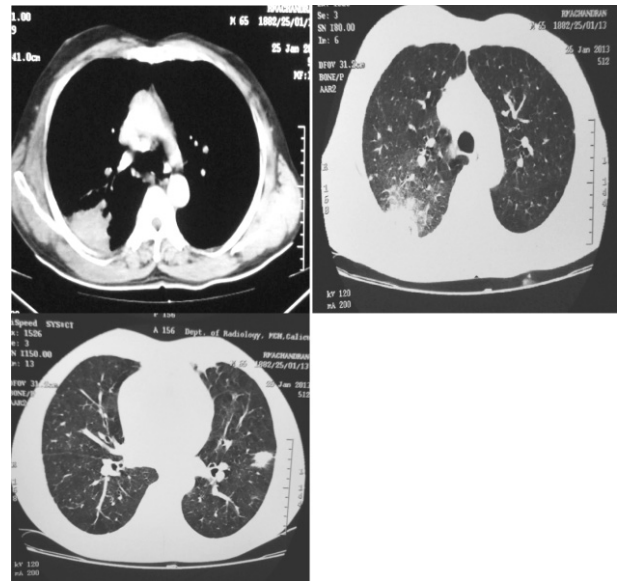

Fig. 2

lignancy and multiple myeloma, investigations ordered included hemogram, ESR, Peripheral smear, Renal function test, Sputum AFB, Mantoux and CECT Thorax ,which showed a Leucocyte count of 10800/cumm, Hb- 7.6gm%, ESR- 14mm in first hour, RFT- 29/1.9mg/dl, sputum AFB smear negative with non reactive mantoux. The CECT Thorax (fig 2) – showed an enhancing soft tissue density lesion with irregular borders (5 x 3.8 cm) in posteror segment of right upper lobe with surrounding ground glass pattern and smooth interlobar septal thickening,multiple pulmonary nodules noted in Left lung field with right pleural effusion and no mediastinal adenopathy. The final impression was possibility of carcinoma – Right upper lobe with multiple pulmonary nodules. The case was discussed with radiologist who proposed an infectious etiology, so CT guided FNAC was deferred and antibiotics were continued. There was symptomatic improvement with X ray clearance (fig 3).

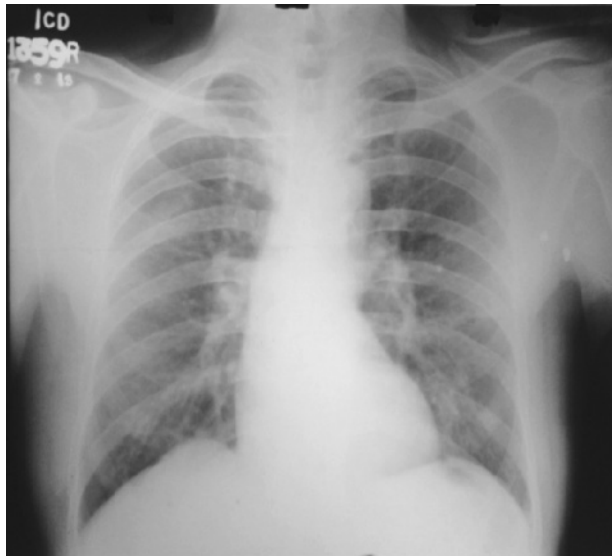

Fig. 3

Two and a half months later, patient presented with high grade fever, chills and cough with scanty mucoid sputum. On examination he was ill looking and anxious. He was febrile with a respiratory rate of 32/minute and pulse rate 102/ minute. Systolic Blood pressure was 80mm Hg and oxygen saturation was 90% on room air. He was pale with bilateral pitting pedal oedema. On auscultation, bilateral coarse crackles in infrascapular and infraaxillary areas were heard. JVP was not raised with normal first and second heart sound. On per abdomen examination, liver was firm 3cm below costal margin in midclavicular line. His CXR revealed bilateral lower zone acinar shadow with confluence (Fig 4).

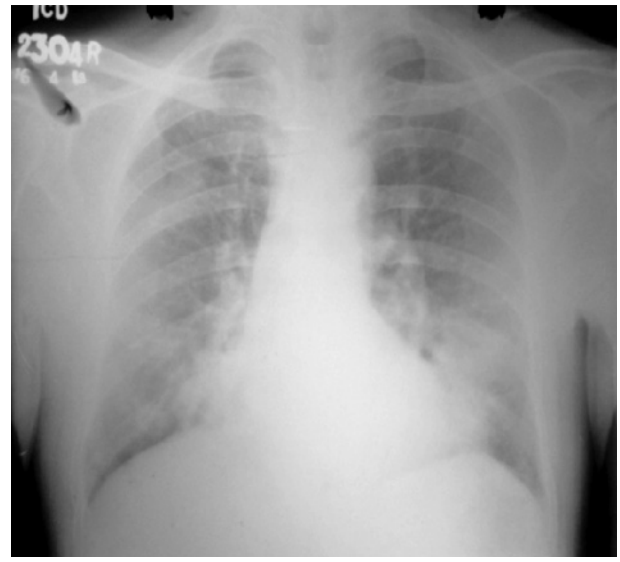

Fig. 4

He was admitted with a working diagnosis of bilateral pneumonia with sepsis / type 2 Diabetes Mellitus. He was started on intravenous antibiotics (Amoxycillin-Clavulanic acid and Levofloxacin) after immediately sending a blood culture. All supportive measures were offered, routine investigations and peripheral smear were sent.

Hematological investigation results were as follows: hemoglobin: 8.2gm%, total leucocyte count: 29,000/cumm with polymorphs 80% and lymphocytes 8%. ESR was 122mm in first hour. Blood sugar values and liver function test were within normal limits. His renal parameters were deranged with blood urea- 63mg/dl and serum creatinine – 2.3mg/dl with a creatinine clearance of 28 ml/min with normal routine urine examination. Antibiotic dosage was modified based on creatinine clearance .

Sputum AFB smear examination showed no acid fast bacilli and sputum culture yielded normal flora. But his blood culture yielded α-lytic streptococci- Pneumococci sensitive to Pencillin, Ampicillin, Ceftriaxone, Erythromycin and Vancomycin. His electrocardiogram showed features suggestive of left ventricular hypertrophy, Trop I was negative and Echocardiogram showed no vegetations or regional wall motion abnormality with good left ventricular function.

Meanwhile his peripheral smear report showed atypical lymphoid cells with markedly irregular clover shaped nucleus & deep blue cytoplasm in a background of neutrophilia (possibly reactive) with occasional normoblasts, myeloid shift to left (indicating Bone marrow infiltration) suggestive of Leukemia. His USG abdo-

men revealed hepatomegaly with mild fatty change and Grade 1 medical renal parenchymal disease with no obvious lymphadenopathy. Bone marrow aspirate was showing a cellular marrow & imprint showed infiltrate of atypical lymphoid cells constituting atleast 30% of marrow, large cells with clover shaped nucleus & abundant blue cytoplasm. The morphology corresponded to Adult T cell Leukemia.

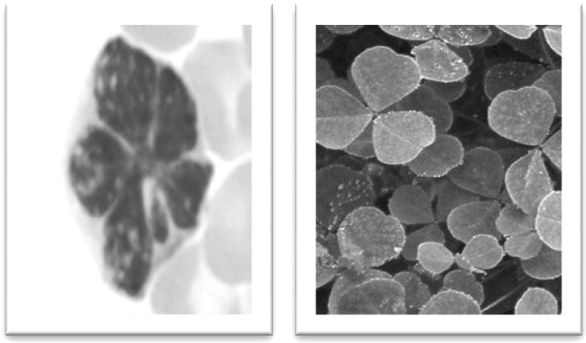

Fig. 5

Showing large cells with clover shaped nuclei. Clover leaves are shown in contrast

There was no monoclonal protein in serum or urine with no lytic lesions in skull X ray.

Discussion

Pulmonary complications occur during the course of disease in nearly 80% of patients with leukemia, and are the major cause of death[1]. The causes of infiltrates in chest x ray in leukemia includes

- Pulmonary involvement in patients with hyperleukocytic leukemia
  - i. Leukemic lung infiltration–occur in <10% of individuals[2]. These are typically interstitial in distribution with the blast cells around smaller bronchi and blood vessels and may seem to form nodules[3]. Leukemic pulmonary infiltrate usually present with symptoms of fever, dyspnea, cough and hemoptysis and radiographic infiltrates, clinically suggestive of pneumonia with negative culture results and infiltrates resolve with chemotherapy[4]. Here blast cells are usually more than 40% in peripheral blood[5]. Surgical lung biopsy and leukemic cells in BAL helps in diagnosis.
  - ii. Leukostasis - aggregation of leukemic blast cells within the pulmonary vasculature in patients with very high white blood cell counts > 2,00,000/μL^3.
  - iii. Leukemic cell lysis pneumopathy (LCLP) - Local tissue damage and hypoxemia as a result of vascular obstruction and oxygen consumption by blast cells, with the injury being perpetuated by toxic and thromboplastic substances released by these cells in response to chemotherapy. LCLP can occur in patients with leukocyte counts of less than 50,000/μL^6.
- Infections
- Alveolar proteinosis
  - Unavailability of competent alveolar phagocytes secondary to profound leukopenia
  - Inhibition of alveolar phagocytosis by elevated globulins
- Pulmonary haemorrhage
- Chemotherapy induced toxicity

Our patient with evidence of bacteremia, responded to antibiotics within 48 hours. He improved clinically and radiologically with repeat Chest X Ray after 8 days showing clearence (Fig. 6). Thus a final diagnosis of Adult T cell Leukemia with Recurrent pulmonary infection, Type 2 Diabetes Mellitus. Patient was refered to hematology department of our institution for further management.

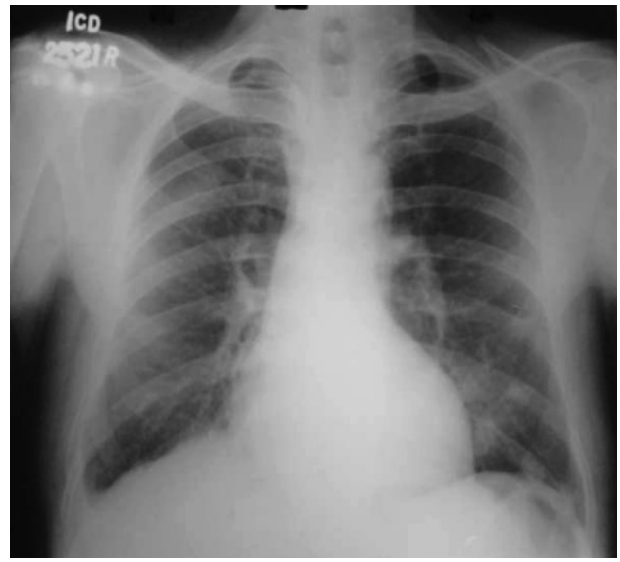

Fig.6

Infections are a common cause of death and an even more common cause of morbidity in patients with a wide variety of neoplasms. The level of suspicion of infections with certain organisms should depend on the type of cancer diagnosed.

INFECTIONS ASSOCIATED WITH SPECFIC TYPES OF CANCER

Cancer	Underlying immune abnormality	Organism causing infection
Multiple myeloma	Hypogammaglobulinemia	Streptococcus pneumoniae, Haemophilus influenzae, Neisseria meningitidis
Chronic lymphocytic leukemia	Hypogammaglobulinemia	S. pneumoniae, H. influenzae, N. meningitidis
Acute myelocytic or lymphocytic leukemia	Granulocytopenia, skin and mucous membrane lesions	Extracellular gram positive and gram negative bacteria, fungi
Hodgkin's disease	Abnormal T cell function	Intracellular pathogens (Mycobacterium tuberculosis, Listeria, Salmonella, Cryptococcus, Mycobacterium avium)
Non Hodgkin's lymphoma & acute lymphocytic leukemia	Glucocorticoid chemotherapy, T and B cell dysfunction	Pneumocystis
Colon and rectal tumours	Local abnormality	Streptococcus bovis
Hairy cell leukemia	Abnormal T cell function	Intracellular pathogens (M.tuberculosis, Listeria, Cryptococccus, M. avium)

Recurrent pneumonia can be an initial presentation in hematological malignancies. Thus these patients are to be assessed thoroughly, so that early diagnosis and early treatment of underlying malignancy can be instituted.

Reference

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