



Case report

Pulmonary Langerhans Cell Histiocytosis (PLCH) masquerading as Atypical Mycobacterial infection

Aijaz Yazdani^{a,*}, Michael Bousamra II^b, Ijlal Yazdani^c

^a E' town Lung Specialist and Sleep Disorders Center, Suite 102, Elizabethtown KY, 42701, USA

^b Baptist Health Floyd, IN, USA

^c MS 4, Univ. of Louisville, KY, USA

1. Introduction

PLCH (Pulmonary Langerhans Cell Histiocytosis) is an uncommon Interstitial Lung disease, also known as, Eosinophilic Granuloma and Histiocytosis X. It primarily affects young adult smokers; true incidence and prevalence is not known [1].

It has been found associated with Mycobacterium Tuberculosis infection in the past (three case reports) [2–4].

To our knowledge there has been one case report of Histiocytic Hyperplasia (Histiocytoma) (NOT PLCH) associated with Atypical Mycobacterial growth (Mycobacterium Knasasii) with focal acute nonspecific necrosis in Mediastinal Lymph nodes [5].

2. Case description/summary

- 48-year-old female 30-pack-year smoker; initially quit smoking in 2015 due to cough and SOA; but later she continued to smoke off and on. She presented to us in 2016 with persistent cough shortness of air and associated wheezing.
- Her symptoms were present for one year before current presentation.
- Her Physical exam was negative for any rhonchi or crackles, Chest X ray, showed diffuse interstitial markings with nodular opacities and hilar lymphadenopathy.



Chest X ray with initial symptoms in 2016.

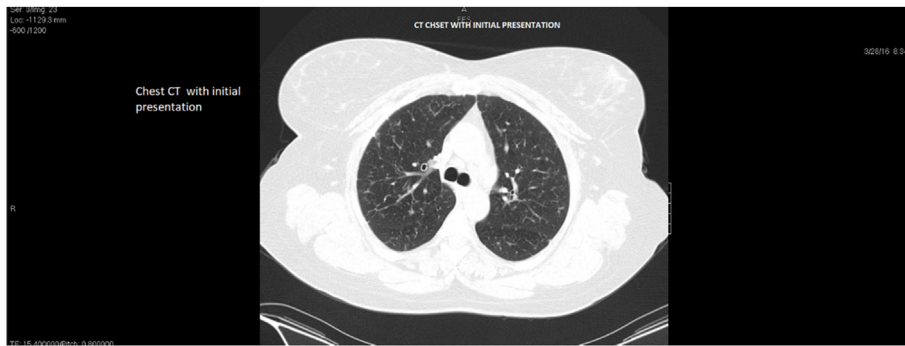
* Corresponding author.

E-mail address: ayazdanipulmonologist@yahoo.com (A. Yazdani).

<https://doi.org/10.1016/j.rmcr.2018.04.001>

Received 23 January 2018; Received in revised form 26 March 2018; Accepted 3 April 2018

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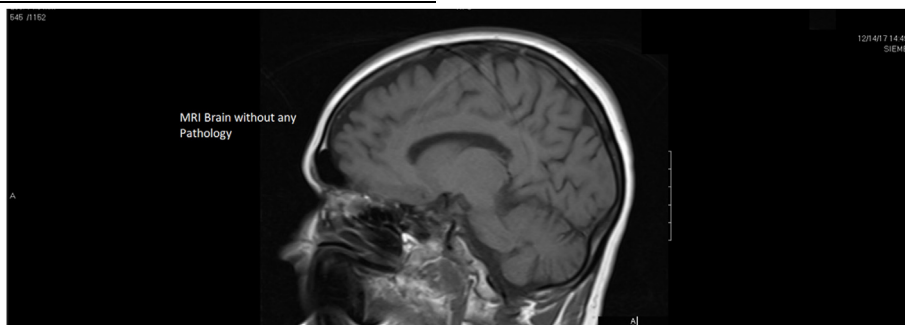
Chest CT on initial presentation.

- CT chest showed numerous nodular and reticulonodular densities bilaterally along with mediastinal lymph nodes enlargement up to 1.2 cm

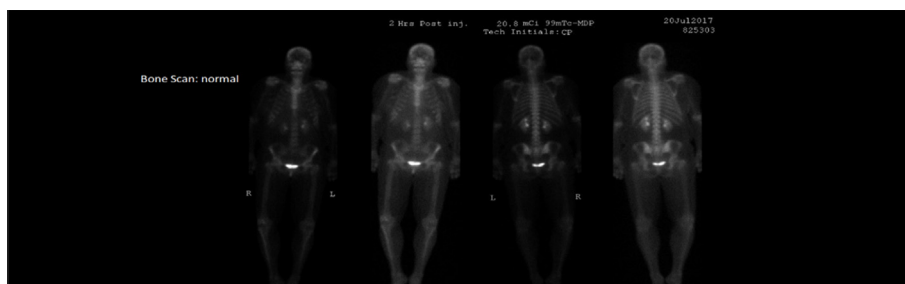


Mediastinal lymphadenopathy at initial presentation.

- She had a positive PPD 15 years ago.
- She had no other organ involvement by history and did not have polydipsia, polyuria, any jaw pain or bone pain.
- This was confirmed later with a bone marrow biopsy, total body skeletal scan, and MRI of the brain.



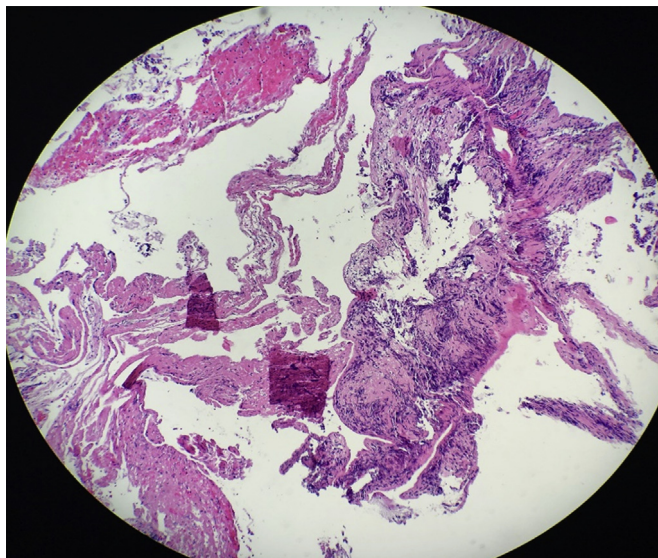
MRI brain without any pathology.



Normal bone scan.

- Bronchoscopy, with EBUS transbronchial Lymph node aspiration and fluoroscopic transbronchial Lung biopsy tissue showed acute and chronic inflammation; No granuloma; malignancy or viral inclusions were detected.

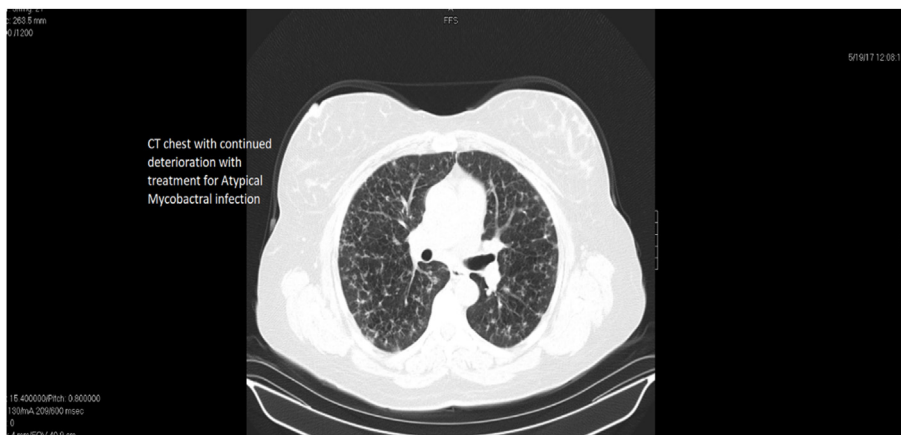
- Patient was referred for infectious disease consult.
- She was treated for both infections consecutively; symptoms improved initially, but after a month she had recurrence of symptoms.
- She continued to smoke off and on despite medical advice to quit



First Transbronchial Lung biopsy under Fluoroscopy.

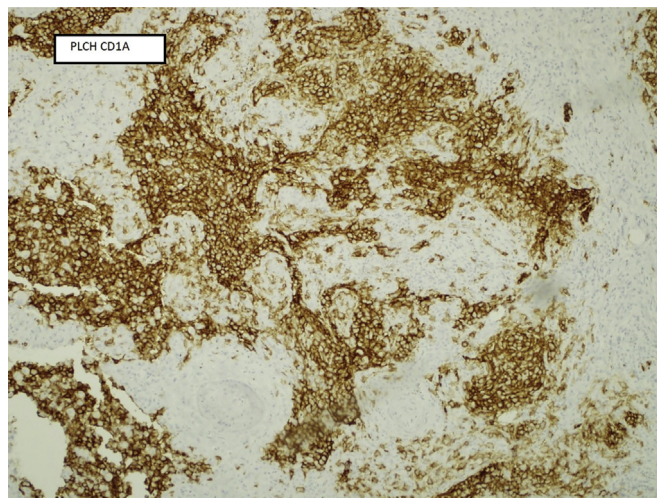
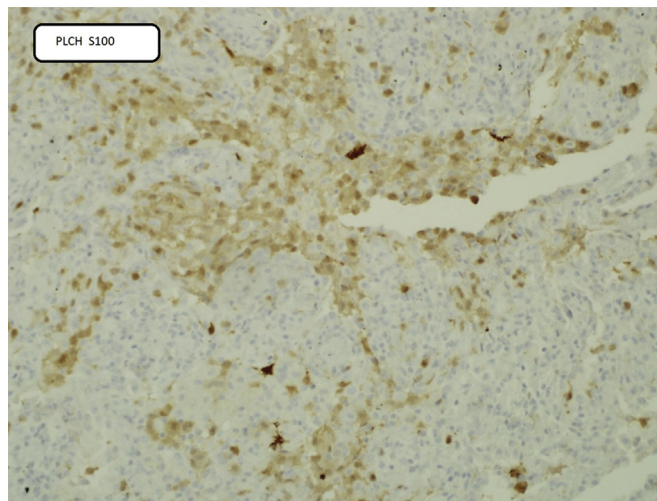
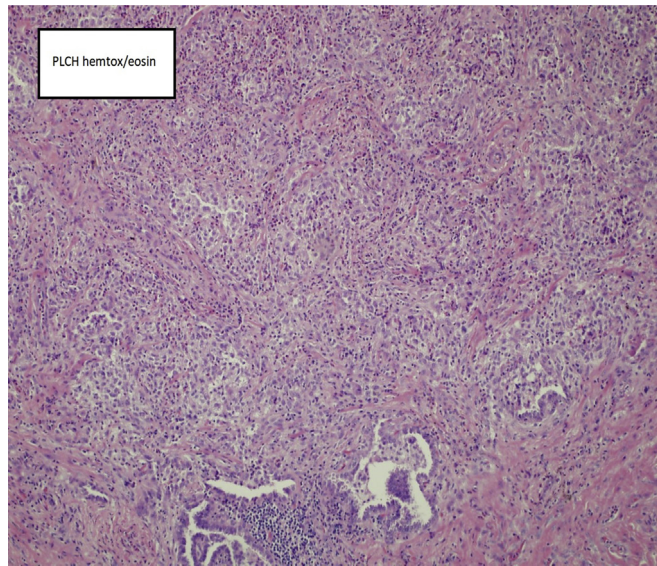
- BAL grew *Strep Pneumoniae* initially; and AFB on 5th week recognized as *Mycobacterium Gordonae*. (CD4: CD8 differential was not done on bronchoalveolar lavage fluid.)

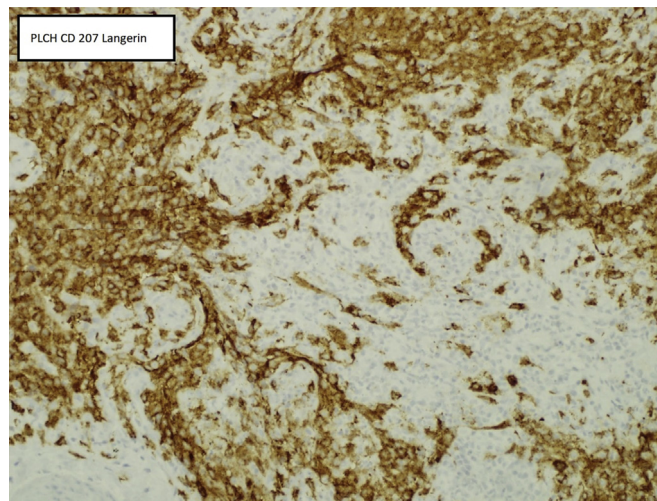
- smoking.
- Repeat CT Chest showed persistent deterioration with nodular ground glass densities; worsening infiltrates and mild bronchiectasis changes bilaterally.



CT chest with continued deterioration with treatment for atypical mycobacterial infection.

Finally, Surgical Lung biopsy was performed which revealed Pulmonary Langerhans's Cell Histiocytosis.





3. Discussion

- Pulmonary Langerhans Cell Histiocytosis is an uncommon interstitial Lung disease now considered as been grown from one clone of cells with BRAF mutation (BRAF V600 E) along with markers, S100, CD1a and CD 207/Langerin; now considered a form of malignancy (myeloid neoplasm) with inflammatory properties [8].
- Smoking is a major associated risk factor, resulting in improvement in many and no improvement in some cases after quitting smoking.
- There have been three reports of Mycobacterium Tuberculosis associated with PLCH [6,7].
- There has been one report of Atypical Mycobacterium Knasasii associates with Histiocytosis; but this was associated with acutely necrotic mediastinal Lymph nodes with Histiocytic reaction, Not PLCH. (clinicopathological conference AJOM, Green Journal, 1971 vol. 49 Dec 1970)
- An increasing number of secondary malignancies and nonmalignant tumors have been observed with PLCH, including lung carcinoma, carcinoid tumor, Hodgkin's and non-Hodgkin's lymphoma and mediastinal ganglioneuroma.
- Pulmonary hypertension has been found in 17–92% of patients with PLCH which is considered due to vascular changes with intimal fibrosis associated with moderate to severe muscularization of pulmonary veins.
- Our patient did not have evidence of Pulmonary HTN on Echocardiogram.
- Venocclusive disease with Pulmonary HTN is associated with increase mortality.
- Symptoms most often associated with PLCH: nonproductive cough, dyspnea, fatigue, weight loss, fever and chest pain are very non-specific and are present with many infectious and noninfectious pulmonary processes which adds to the difficulty with the diagnosis in non-classical chest imaging
- Our case puts importance in evaluation and consideration of further work up such as Open Lung Biopsy if there is no significant improvement with the treatment of obvious pulmonary infection associated with persistent radiological findings.
- Radiological features of PLCH are unique; but they may take longer to be recognized and diagnosed. As in our case initial radiological findings were confusing and were considered due to infectious

process especially when microorganisms grew on Bronchoalveolar Lavage and culture.

4. Conclusion

- Although PLCH has been described associated with Mycobacterial infection in the literature, it can easily be missed with the constellation of pulmonary symptoms and initial radiological findings.
- Repeat imaging should always be performed, to ensure that the radiological process has resolved as this was the key in the diagnosis of this patient
- Mycobacterium Gordonaee is often a colonizer and is not usually felt to cause pathologic disease, our patient was not considered immunocompromised and further evaluation for immunocompromised status were negative including HIV testing.
- Are Atypical Mycobacterial infections associated with PLCH, due to underlined but unrecognized impaired immunity or are they an incidental association; needs further evaluation [9–11].
- Physician should be wary of these associations which can confuse and may result in delay in the diagnose of PLCH.

Appendix A. Supplementary data

Supplementary data related to this article can be found at <http://dx.doi.org/10.1016/j.rmcr.2018.04.001>.

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