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BACKGROUND

Soft tissue sarcomas associated with eosinophilia is described in adults, however there are limited number of cases reported in the pediatric population. A 17-year-old male with mild persistent asthma initially presented to the emergency room following a head trauma, with unremarkable head imaging. He additionally mentioned intermittent cough, and incidentally found to have a 1.8 cm nodule in his left middle lung and a 1-cm nodule in the right lung base on chest x-ray. CT chest showed multiple bilateral pulmonary nodules (largest 2.1-cm) (Fig 1). Complete blood count (CBC) was notable for WBC of 22, 33% eosinophils, and absolute eosinophilic count of 7029. Patient did not endorse any respiratory symptoms, weight loss, night sweats, fatigue, fevers, chills. He denied tuberculosis risk factors, sick contacts, recent travel or smoking exposure.

PURPOSE

The purpose of this case is to highlight the importance of including malignancy in the differential in the setting of severe eosinophilia, especially in children.

METHODS

Given findings of pulmonary nodules and eosinophilia, investigation of idiopathic hypereosinophilia was initiated. Infectious work-up, bone marrow biopsy, T-cell, B-cell, and NK-cell (TBNK) cell subset testing, and rheumatological work-up were performed. Additionally, a BAL and lung nodule biopsy were obtained to further evaluate the patient's clinical presentation. (Fig 2).

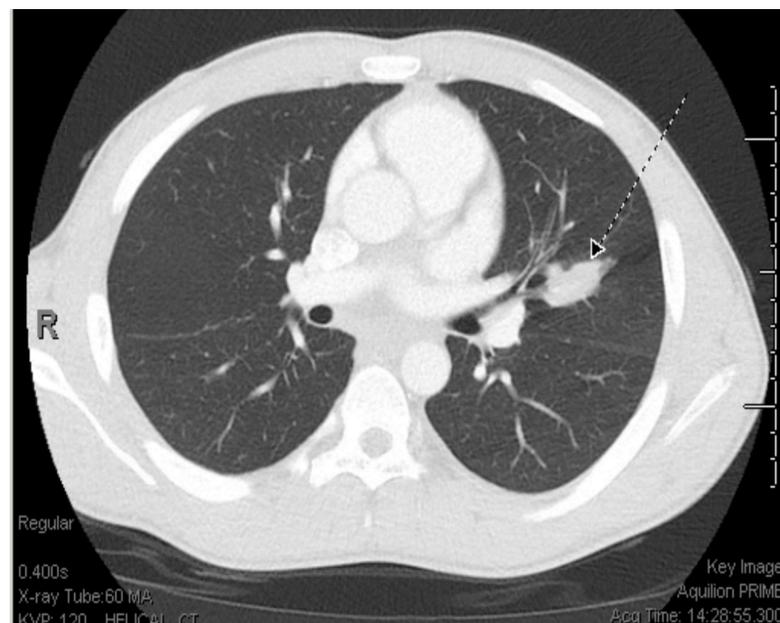


Figure 1: CT chest showing multiple bilateral centrilobular pulmonary nodules with an elongated lesion in the left upper lobe suggesting mucoid impaction, measuring 3.3-cm.

TEST	RESULT
Absolute Eosinophilic Count	7029 ↑
Total IgE	147
CMP	Normal
ESR	Normal
FIP1L1/PDGFR mutation	Normal
T-cell clonality test	Normal
B-cell clonality test	Normal
Tryptase level	Normal
B12 level	Normal
Trichinella serology	Negative
Toxocara serology	Negative
Strongyloides serology	Negative
Troponin	<0.01
Bone marrow biopsy	Unremarkable
Cardiac echo	Normal
EKG	Sinus rhythm
PFTs	No obstructive/restrictive pattern
CT Chest	Bilateral pulmonary nodules
CT Abdomen/Pelvis	2 small splenic calcifications
Tissue Biopsy	Left Thigh: dedifferentiated liposarcoma; Lung: metastatic high grade sarcoma with overexpression of MDM2
T cell CD3-CD4+, CD3+CD4-CD8-, and CD4+CD7-	Normal

Figure 2: Hyper-eosinophilia work-up. Lung nodule and thigh mass biopsy findings were critical to the diagnosis of secondary eosinophilia from metastatic malignancy.

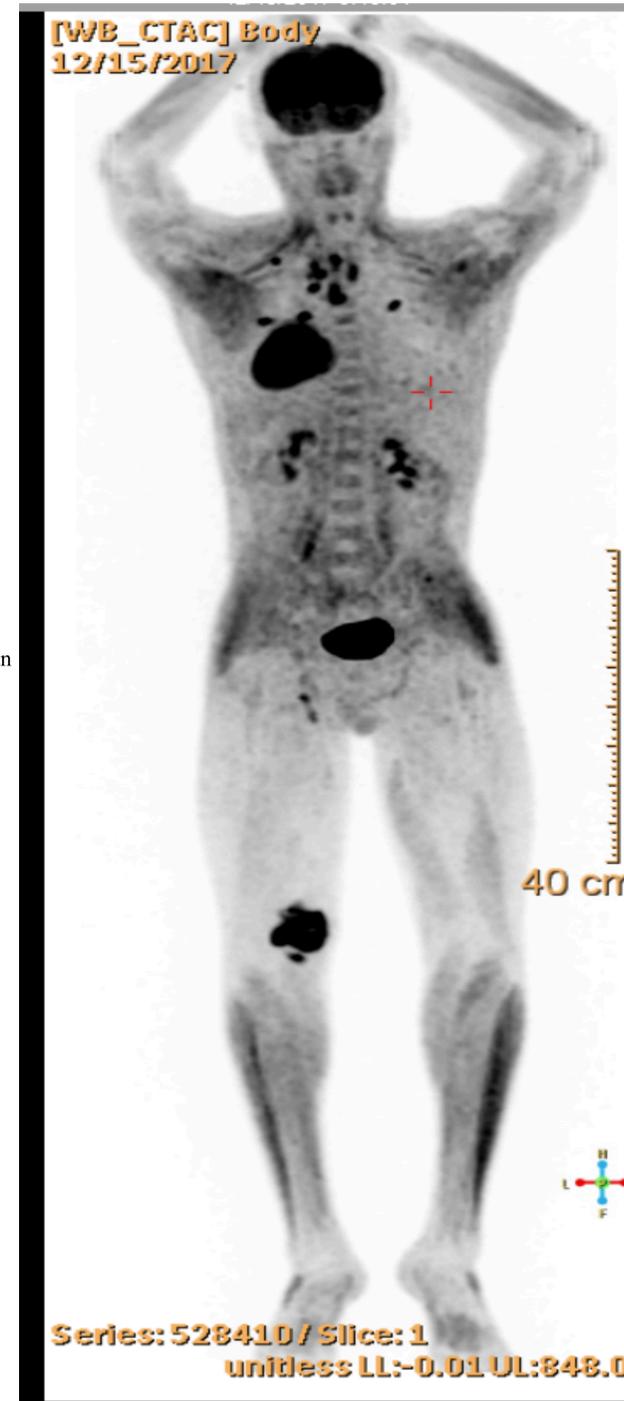


Figure 3: Whole body PET demonstrating diffuse metastatic disease in the lungs, mediastinum, brain and left femoral lymph nodes, with left popliteal mass.

RESULTS

An infectious work-up was essentially unremarkable, with negative fungal and parasitic serologies, and stool ova and parasites. Myeloproliferative diseases were ruled out with a negative bone marrow biopsy, and lymphoproliferative diseases and immunodeficiencies were ruled out with negative T-cell, B-cell, and NK-cell (TBNK) cell clonality testing. Additional testing to evaluate for an underlying rheumatologic condition also came back negative, including normal ANCA, ANA, ESR/CRP. BAL showed eosinophilia. Lung nodule biopsy revealed high-grade metastatic sarcoma with overexpression of MDM2. Further staging scans were completed, including a PET-CT, demonstrating a 7.9-cm mass in the left posterior thigh with metastases to the brain, lungs and mediastinum (Fig 3). Biopsy of the thigh mass revealed dedifferentiated liposarcoma, confirming the primary tumor.

CONCLUSION

Hypereosinophilia is rare, especially in children. Thorough evaluation of the underlying cause and assessment of end organ damage is always warranted. Without appropriate assessment, the root cause of hypereosinophilia might be missed, leading to adverse outcomes. Lung biopsy in this patient was critical in establishing the diagnosis of metastatic liposarcoma.

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