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Case Report

Sarcoid like reaction masking Hodgkin`s lymphoma: a case report

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Abstract: Non-caseating granulomas are a histological hallmark of sarcoidosis. Nevertheless, these tissue reactions may also be observed in lymph nodes that are associated with a malignant tumor. Sarcoid like reaction (SLR) occurs when non-caseating epithelioid cell granulomas grow in people who do not have systemic sarcoidosis. SLR has been linked to several diseases, pharmacological exposures, and malignancies. These reactions can present a clinical challenge in differentiating them from systemic sarcoidosis, increasing the risk of misdiagnosis. Sarcoid reactions cause epithelioid-cell granulomas to develop because the immune system reacts hypersensitively to antigenic elements, such as those found in tumor cells. Typically located on the lymph nodes periphery, they are rather common in malignancies, especially lymphomas. Sarcoid-like reactions (SLR) are a phenomenon that can be observed in carcinomas (4.4%), Hodgkin's disease (13.8%), and non-Hodgkin's lymphoma (7.3%). Distinguishing between systemic sarcoidosis and SLR is crucial, as the consequences of an incorrect diagnosis of sarcoidosis and a delay in the treatment of the underlying malignancy could be severe.

Keywords: Sarcoidosis, Sarcoid like reaction, Lymphoma

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Introduction:

Non-caseating granulomas are a histological hallmark of sarcoidosis. Nevertheless, these tissue reactions may also be observed in lymph nodes that are associated with a malignant tumor. Sarcoid-like reactions (SLR) are a phenomenon that can be observed in carcinomas (4.4%), Hodgkin's disease (13.8%), and non-Hodgkin's lymphoma (7.3%) .[1]

CASE PRESENTATION: Female patient 32 years old with no previous significant medical history sought medical advice for persistent fatigue, increasing dyspnea and weight loss in the last couple of months. She lost about 10 kgs in these past two months. She also reported persistent low-grade fever mainly at night. She had no cough, hemoptysis, chest or abdominal pain nor palpitations. She was not taking any medications.

On examination, she was an ill looking pale female, under body-built. Her vital signs were normal except for an oral temperature of 37.8 °C. Her chest and cardiac examinations were normal and abdominal examination was free apart from tenderness in the right upper quadrant. No lower limb swelling.

Routine blood works were requested and revealed a normocytic normochromic anemia with HGB 8.7 gm/dl and a normal total and differential WBCs count. CRP was 196 mg/L and 1st hour ESR was 110 mm/hr. Liver and kidney functions tests were normal.

Plain chest x-ray was requested and revealed a left hilar shadow with broadening of the mediastinum (Figure 1). Neck and axillary US examination was requested with no abnormality detected.

Pelvi-abdominal US examination was done and revealed multiple variable sized nodal enlargements mainly at porta hepatis, peri-aortic and peri-pancreatic groups with hypoechoic texture ranging from 3.2 to 4.5 cm in diameter. There were also two irregular hypoechoic hepatic focal lesions seen at the sub-diaphragmatic and segment VI measuring 3.0 X 4.8 cm and 10.0 X 6.0 cm respectively. There was also a small non-homogenous hypoechoic splenic focal lesion 13 mm in diameter.

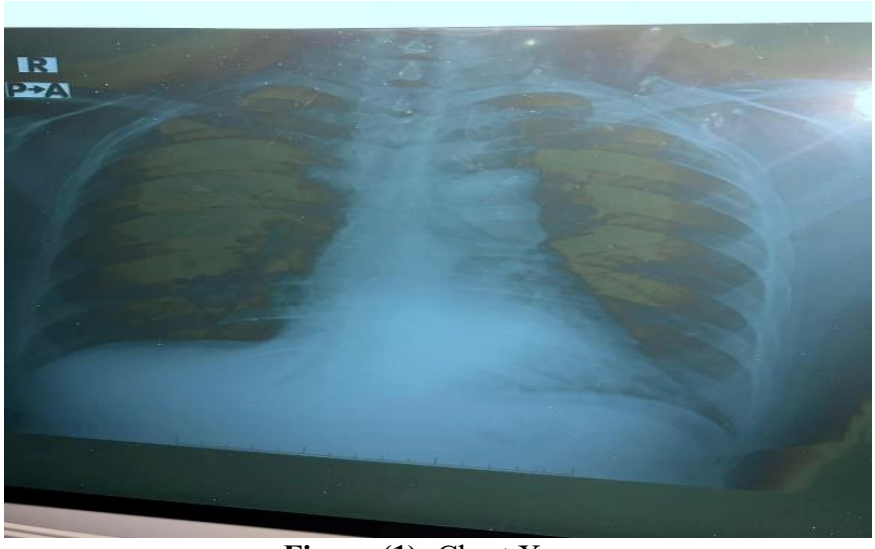

Figure (1): Chest X-ray

Contrast-enhanced MSCT scan of the chest was requested and revealed innumerable voluminous mediastinal lymphadenopathy involving the pre-vascular, para-aortic, and paratracheal groups with the largest reaching up to 2.6 x 3.5 cm in diameter and right minimal pleural effusion and minimal pericardial effusion (Figure 2).

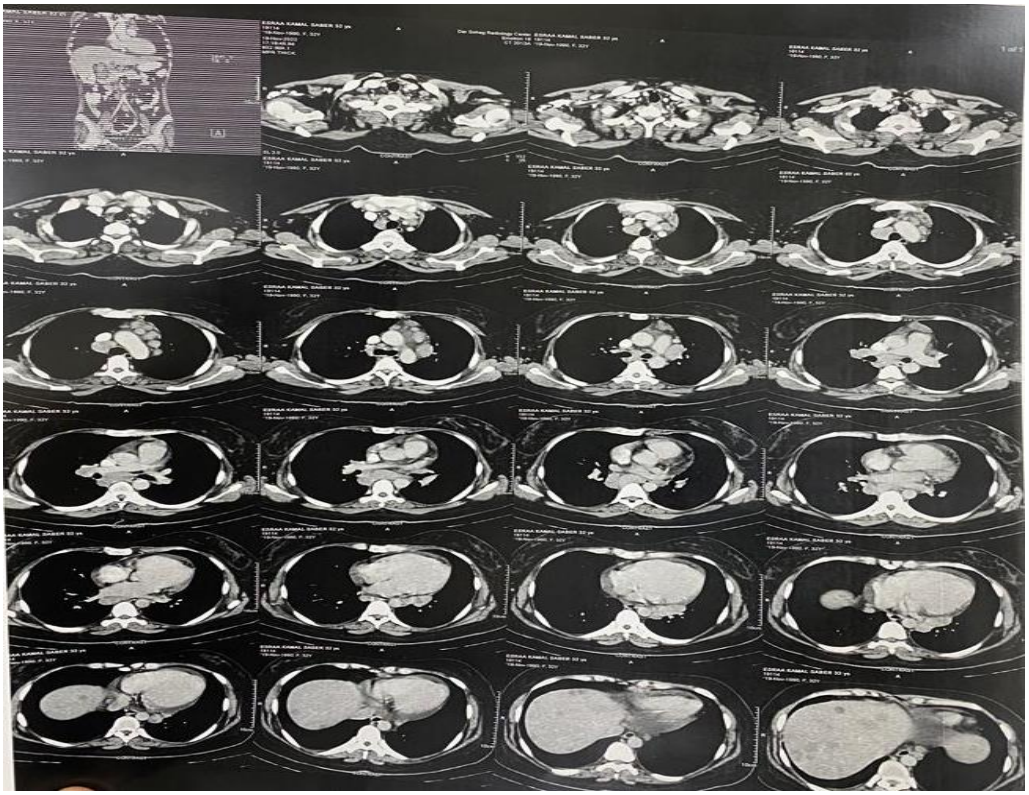

Figure (2): CE-MSCT chest.

Contrast-enhanced MSCT scan of the abdomen and pelvis was requested and revealed multiple variable sized solid hypodense non-enhancing hepatic focal lesions seen at both lobes ranging in size from 1 x 1 cm to 4 x 5 cm in diameter. Also, the spleen showed few small (average 1 x 1 cm in diameter) and single large (4 x 4.5 cm in diameter) solid hypodense non-enhancing focal lesions. Also, there were multiple enlarged abdominal LNs seen at porta hepatis, mesenteric, peripancreatic, splenic hilum, peri-gastric, para-aortic, aorto-caval and left epi-phrenic regions. The enlarged LNS mildly encroached on the gastric antro-pyloric region and on the 2nd loop of duodenum. Minimal free ascites was also noted (Figure 3).

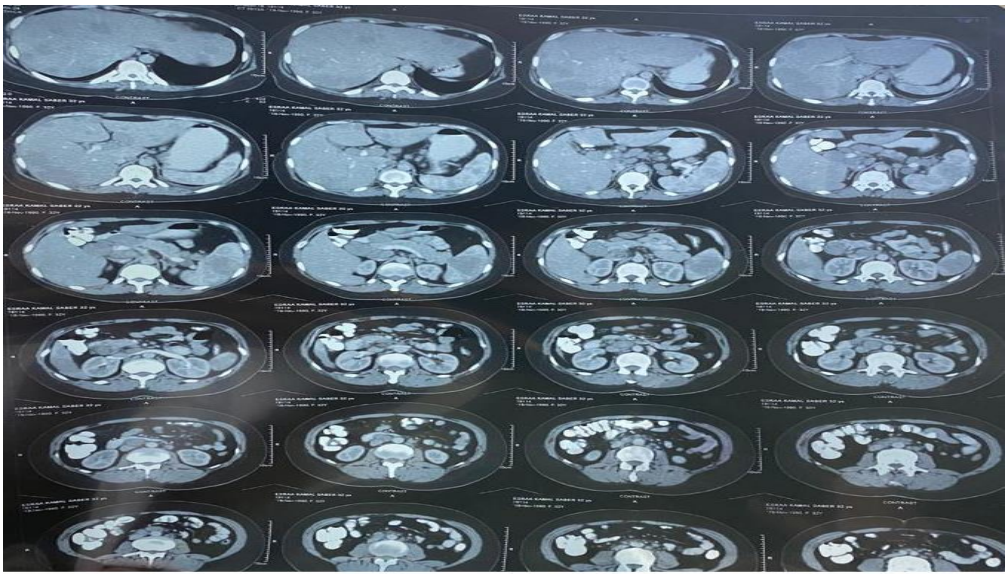

Figure (3): CE-MSCT abdomen and pelvis.

Ultrasound guided tru-cut needle biopsy was taken from the large hepatic focal lesion as the most accessible and least invasive site and revealed a non-caseating epithelioid cell granulomatous inflammation with atypical lymphoid infiltrate, but no solid evidence of malignancy (Figure 4). Immunohistochemistry was done for the CD 20, SMA, CD 3, Pan CK, CD 138, CD 30, CD 15 and PAX 15 antigens and the result was a mixed inflammatory process with moderate fibrosis, atypical lymphoid infiltrate and inconclusive for malignancy.

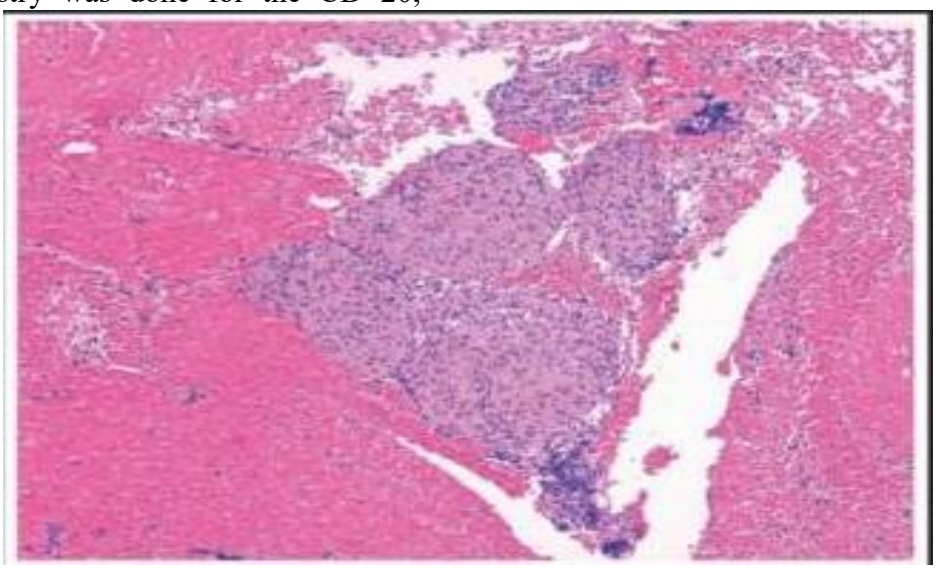

Figure (4): Non-caseating granulomatous inflammation with atypical lymphoid infiltrate

A whole body ^{18} F - FDG PET/CT study was obtained from skull base to the mid-thigh using a low dose non contrast CT and revealed (Figure 5):

- ✓ **Lymph nodes:** increased FDG uptake corresponding to lymphadenopathy including:
  - o **Axillary**, right axillary level II, SUV max 5.5 as measured over a 0.7 cm node.
  - o **Mediastinal**, superior mediastinal, pre-vascular, pre-tracheal, tracheobronchial, aortopulmonary, carinal, subcarinal, bilateral hilar, SUV max 11.4 as measured over a 3.2 cm left hilar, SUV max 11.5 as measured over a 4.7 cm subcarinal.
  - o **Abdominal**, porta hepatis, left para-aortic, aorto-caval, portocaval, retrocaval, mesenteric, left gastric, peri splenic, bilateral common iliac, bilateral external iliac as well as left internal iliac, SUV max 6.8 as measured over a 1.5 cm aortocaval, SUV max 3.2 as measured over a 0.8 cm let internal iliac.
  - o **Inguinal**, right inguinal lymph nodes, SUV max 4.8 as measured over a 1.6 cm left inguinal.
- ✓ **Liver**:
  - o Increased FDG uptake corresponding to multiple bi-lobar hypodense focal lesions, SUV max 11.1 as measured over a 5.1 cm segment II lesion, SUV max 8.02 as measured over a 2.8 cm segment VIII lesion.
  - o Non-FDG avid segment IV hypodense focal lesion measures about 2 cm, **likely cyst.**
  - o Enlarged, measures 18.2 cm.
- ✓ **Spleen**:
  - o increased FDG uptake corresponding to multiple splenic focal lesions, the largest seen in the lower pole with SUV max 7.5 and it measures about 5.1 cm.
- ✓ **Right adnexal cyst** measures about 4.7 cm, with no significant FDG uptake.
- ✓ **Lungs**, no FDG avid pulmonary nodules. No pleural effusion and mild pericardial effusion.
- ✓ **Bone marrow**, no FDG avid focal lesions.

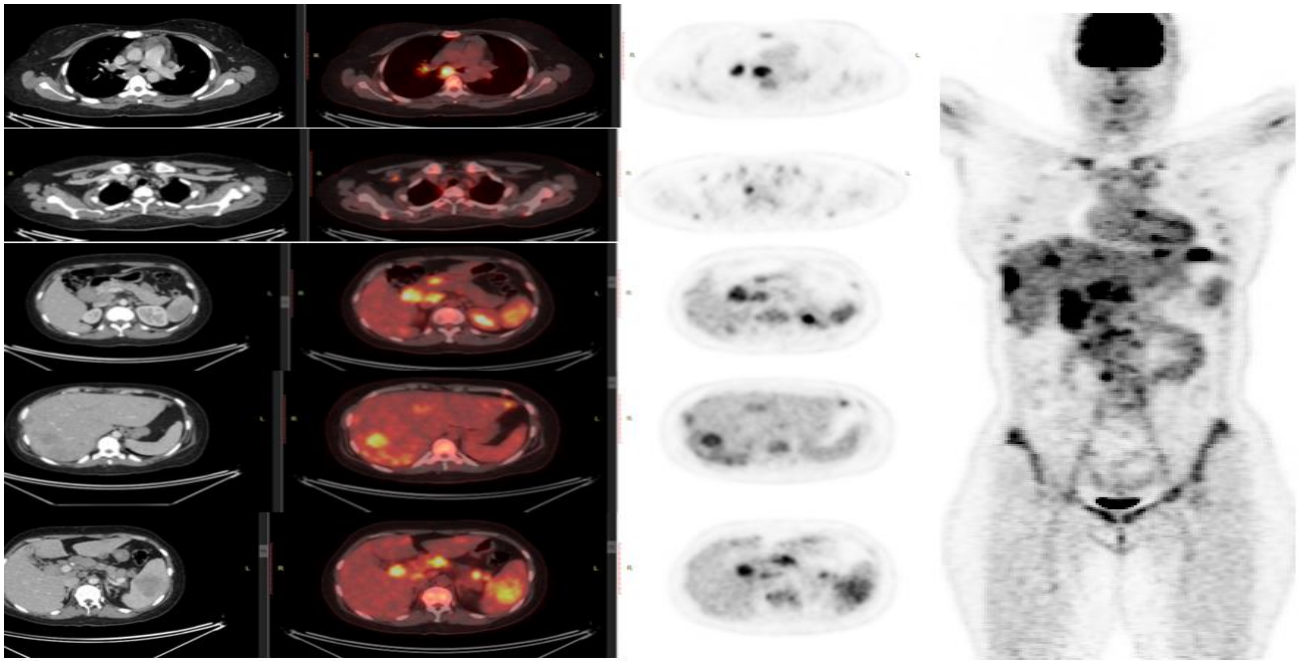

Figure (5): Whole body 18 F - FDG PET/CT

For the diagnosis of systemic sarcoidosis, the patient was initiated on oral prednisone at a dosage of 60 mg/day for a period of six months. Subsequently, the dosage was gradually reduced over an additional six months Following therapy, the patient's symptoms of weariness and dyspnea with light exertion resurfaced, along with a weight loss of around 8 kg over three months A follow-up whole body 18 F - FDG PET/CT investigation was decided upon, and the results showed:

1. Regressive course of the FDG avid hepatic and splenic infiltrations.
2. Regressive course of the FDG avid infra-diaphragmatic lymphadenopathy, yet with newly seen FDG avid left external iliac LNS reaching 2.4 x 1.5 cm with max. SUV 5.2.
3. Mixed response of the FDG avid supra-diaphragmatic lymphadenopathy, with predominating progressive course. Newly seen FDG avid anterior mediastinal nodal lesion measuring about 4.6 x 2.4 cm with max. SUV 10.5.
4. Newly seen bilateral FDG avid pulmonary mass like lesions and nodules as follows:

a. Solitary large upper lobe extending towards the hilum and obstructing the related segmental bronchus. It has a maximum SUV rating of 14.9 and dimensions of 6.5 x 8 x 5.5 cm.

b. Right lower lobe mass like lesion and nodules, the largest measures up to 4.5 x 4.1 cm with max. SUV 9.9 associated with distal subsegmental atelectasis.

5. Diffuse hyper-metabolic bone marrow with max. SUV 6.7.

Upon recurrence of symptoms and appearance of new lesions on follow up ^{18} F - FDG PET/CT, CT guided core needle biopsies were taken from the pulmonary nodules and the enlarged mediastinal LNs and revealed polymorphous lymphoid cell infiltrate with collagenous desmoplasia and scattered atypical large lymphoid cells, picture highly suspicious of Hodgkin`s lymphoma and after immunohistochemistry staining for LCA, CD30, CD15, CD20, CD3 and Fascin revealed a pattern compatible with Hodgkin`s lymphoma, nodular sclerosing variant.

Discussion:

A Sarcoid like reaction (SLR) occurs when non-caseating epithelioid cell granulomas grow in people who do not have systemic sarcoidosis. SLR has been linked to several diseases, pharmacological exposures, and malignancies. These reactions can present a clinical challenge in differentiating them from systemic sarcoidosis, increasing the risk of misdiagnosis.[4] Sarcoid reactions cause epithelioid-cell granulomas to develop because the immune system reacts hypersensitively to antigenic elements, such as those found in tumor cells. Typically
located on the lymph nodes periphery, they are rather common in malignancies, especially lymphomas. [2] The T cell-mediated response to soluble antigens secreted by tumor cells or released in tumor necrosis is believed to be the cause of SLRs. The risk of sampling errors and incorrect diagnosis is elevated when lymph nodes are frequently removed from the node periphery through FNA.[3] Distinguishing between systemic sarcoidosis and SLR is crucial, as the consequences of an incorrect diagnosis of sarcoidosis and a delay in the treatment of the underlying malignancy could be severe.[4]

Conclusion:

Our case emphasizes the importance of evaluating lymphoma in patients with histological characteristics that resemble sarcoidosis, particularly when the clinical presentation deviates from the typical sarcoidosis patterns or when there are distinct therapeutic and prognostic implications. Patients diagnosed with presumed sarcoidosis who are present with persistent lymphadenopathy unresponsive to standard medical treatment should undergo further evaluation, including an excision biopsy, to exclude the possibility of an underlying malignancy.

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