PART 1 | IMAGING IN CLINICAL PRACTICE

Ashraf Abdul-Jabbar Abdul-Abbass
DMRD, Radiologist. E mail: ashraf_jabbar@yahoo.com

A 35 year-old female presented with a progressive mild shortness of breath and non-specific dry cough. She is not known to have any chronic medical illness. She has not smoked before and reported no history of exposure to any chemicals or contact with patient with known chest infection. She is working as an office employee. Examination was unremarkable apart from mild inspiratory fine crackles over the lower chest posteriorly. **Figure 1** is her CXR.

Q1: describe the CXR findings?

Q2: What is the differential diagnosis?

Q3: What is the most likely diagnosis?

Q4: What is the other imaging study needed?

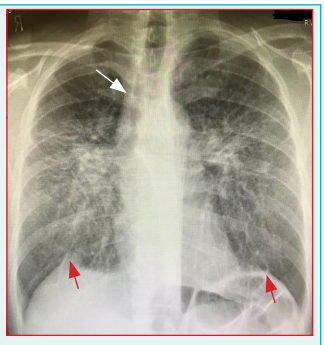

Figure 1: PA view Chest XR

ANSWER OF Q1:

A Chest X-Ray PA view (**figure 1**) shows bilateral hilar (almost symmetrical) lesion suggestive of lymph adenopathy with widening right paratracheal strip suggestive of right para-tracheal lymph nodes enlargement (**white arrow**). There are also diffuse reticulonodular shadowing involving both lung fields mainly mid- and lower zones with fibrotic changes at lung bases (mainly the right side) evident as diaphragmatic tenting (**red arrows**). No pleural effusion or pleural thickening are seen.

ANSWER OF Q2:

Bilateral hilar lymphadenopathy with reticulonodular lung parenchymal lesions:

1. Infections:

Tuberculosis

- It is reported in primary tuberculosis in young adult or elderly with immunocompromised status.
- **Usually unilateral involvement** of right paratracheal lymph node, rarely bilateral.
- Lung involvement occur in form of consolidation in the same side of the enlarged hilar node.
- Usually associated with constitutional symptoms.

Fungal infection

- Like histoplasmosis, coccidioidomycosis, blastomycosis, and cryptococcosis.
- **Usually unilateral** hilar lymphadenopathy but may be bilateral in disseminated infections.
- Associated with lung parenchymal lesions; nodular or consolidation with or without cavitation in immunocompromised patients or in endemic areas.

2. Sarcoidosis:

- **Bilateral symmetrical** hilar and right paratracheal lymphadenopathy.
- Less symptoms than others.
- Unilateral enlargement is extremely rare seen in less than 3 %.
- Calcification seen more with longer duration (20 % after 10 years).
- Lung parenchymal involvement reported in 30 % with lymph node enlargement and about 10 % alone.
- The parenchymal involvement is perilymphatic nodular distribution, reticulation in about 5 %.

3. Tumours:

Metastatis disease LAP

- Usually **asymmetric "lobulated" unilateral** hilar lesions.
- The lesion is hypo attenuated and enhanced with or without calcification
- The lung parenchyma may be normal or showing mass or masses. Reticulation is seen in lymphangitic carcinomatosis.
- Lymph node size in metastasis is usually > 10 mm, however, in 13 % of lymph node <10 mm may have a foci of metastasis.

- Intrathoracic metastasis: bronchogenic carcinoma, esophageal carcinoma, malignant pleural mesothelioma.
- Extra thoracic metastasis: malignancy of the breast, head and neck, genitourinary, and melanoma.

Hodgkin Lymphoma:

- **Bilateral, lobular** may be bulky involving more than a third of thoracic diameter
- The commonest site is mediastinal, hilar LN involved in 35 %
- Calcification is very rare before treatment
- Lung parenchymal involvement is rare (ill defined nodules, single or multiple, or consolidation. Pleural effusion may be present.
- Mild or moderate enhancement

Non-Hodgkin lymphoma:

- Presented as anterior mediastinal and hilar lymphadenopathy or mediastinal mass. Pleura effusion may occur. Lobulation less than in Hodgkin lymphoma.
- Common to affect single group ln than Hodgkin
- Usually bulky, low attenuation, with pleural or pericardial involvement
- Superior vena cava obstruction.

4. Pneumoconiosis

Silicosis:

- Hilar and mediastinal, egg shell calcification

Berylliosis:

- **Symmetric bilateral** hilar lymphadenopathy, isolated rare, diffuse calcification

ANSWER OF Q3:

The most likely diagnosis is sarcoidosis. Asymptomatic or midly symptomatic patient with bilateral hilar and right paratracheal lymphadenopathy in addition to reticular lesion in the lungs is usually sarcoidosis.

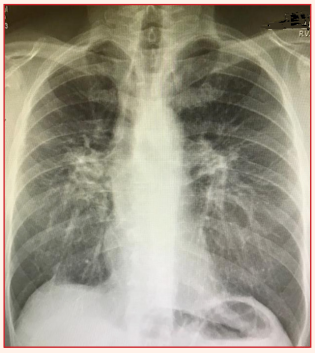

Figure 2: PA view Chest XR of the same patient one month after starting treatment

ANSWER OF Q4:

***CT scan chest in sarcoidosis*:**

- Bilateral upper/mid lung zone perilymphatic micronodules.
- Nodular sarcoidosis: large nodules/ masses/ consolidation
- Airway involvement: stenosis, small airway disease.
- Pulmonary fibrosis (upper lung zone).
- Lymphadenopathy

***FDG PET in sarcoidosis*:**

- non-specific uptake pattern and intensity

REFERENCES

1. Facco M, Cabrelle A, Teramo A, Olivieri V, Gnoato M, Teolato S, et al. Sarcoidosis is a Th1/Th17 multisystem disorder. *Thorax*. 2011 Feb. 66(2):144-50.
2. Sverrild A, Backer V, Kyvik KO, Kaprio J, Milman N, Svendsen CB. Heredity in sarcoidosis: a registry-based twin study. *Thorax*. 2008 Oct. 63(10):894-6.
3. Davies CW, Tasker AD, Padley SP, Davies RJ, Gleeson FV. Air trapping in sarcoidosis on computed tomography: correlation with lung function. *Clin Radiol*. 2000 Mar. 55(3):217-21.
4. Shorr AF, Torrington KG, Hnatiuk OW. Endobronchial biopsy for sarcoidosis: a prospective study. *Chest*. 2001 Jul. 120(1):109-14.
5. Melissa L. Rosado-de-Christenson. Diagnostic imaging Chest. Philadelphia, Pa: Lippincott Williams & Wilkins, 2012.