

## Bilateral Primary Pleural Lymphoma: A Case Report

<sup>1</sup>Maun Nizar Feteih, <sup>2</sup>Manal Mahmood Alsalmi, <sup>3</sup>Haneen Hussain Alabsi, <sup>4</sup>Mohammed Alaa Jamjoom, <sup>5</sup>Meshari Alnijaidei, <sup>6</sup>Anas Ahmad Sultan, <sup>7</sup>Aziz Ahmad Mengal, <sup>8</sup>Mohamed A. Abduljabar,

<sup>1</sup>Consultant Pulmonary Medicine, Department of Internal Medicine, King Faisal specialist Hospital & Research Centre, – Jeddah, Saud Arabia ORCID: 0000-0001-8833-9081 [mfeteih@gmail.com](mailto:mfeteih@gmail.com)

<sup>2</sup>Fellow (IBNSINA), – Jeddah, Saud Arabia ORCID : 0009-0008-3091-5080|

<sup>3</sup>Fellow (KAU), Department of Medicine, King Faisal Specialist Hospital & Research Center, – Jeddah, Saud Arabia ORCID: 0000-0002-2573-0144, [Haneen94alabsi@gmail.com](mailto:Haneen94alabsi@gmail.com)

<sup>4</sup>Fellow (KAU), Department of Medicine, King Faisal Specialist Hospital & Research Center, – Jeddah, Saud Arabia ORCID: 0009-0005-0273-802X, [mohammed-jamjoom@hotmail.com](mailto:mohammed-jamjoom@hotmail.com)

<sup>5</sup>Fellow (UQU), Department of Medicine, King Faisal Specialist Hospital and Research Center, – Jeddah, Saud Arabia [Malnijaidei@gmail.com](mailto:Malnijaidei@gmail.com)

<sup>6</sup>Assistant consultant pulmonary, Department of Medicine, King Faisal specialist Hospital & Research Centre, – Jeddah, Saud Arabia ORCID: 0000-0001-9956-3193, [dranas\\_74@hotmail.com](mailto:dranas_74@hotmail.com)

<sup>7</sup>Department of Family Medicine, King Faisal Specialist Hospital and Research Center, – Jeddah, Saud Arabia ORCID: 0009-0006-3794-8796. [Email:draziz75@gmail.com](mailto:Email:draziz75@gmail.com)

<sup>8</sup>Assistant consultant Gastroenterology, Department of Medicine, King Faisal specialist Hospital & Research Centre, – Jeddah, Saud Arabia ORCID: 0009-0009-6212-0976, [m.jabbar75@gmail.com](mailto:m.jabbar75@gmail.com)

### KEYWORDS

Primary pleural lymphoma,  
Diffuse Large B Cell Lymphoma,  
Pleural Effusion

### ABSTRACT

Primary pleural lymphoma is a very rare entity and usually caused by either HIV or pyothorax. In this case report, we describe a 72-year-old who was presented with a history of chronic cough and weight loss with a CT chest finding of bilateral pleural effusion, and who underwent thoracentesis and cytology that showed large B cell lymphoma. The case report underscores this rare location of primary lymphoma with an aim to raise the awareness of physicians. .

### Introduction

Secondary Malignant pleural Effusion is a well-known outcome for the course of the Lymphoma especially NHL. However a primary pleural lymphoma is a very rare entity (1) mainly arising from DLBCL (2) and usually presented with unilateral pleural effusion , and it has a poor prognosis and outcome we divide the primary pleural lymphoma into two main causes : HIV related Body cavity lymphoma some time associated with HHV 8 coinfection, and pyothorax associated with TB , both are described in immunocompromised patient (1). In our case report we describe a 72-year-old male Immunocompetent patient who has a bilateral primary Pleural lymphoma who has a good life expectancy with No disease recurrence in follow-up without treatment.

### Case presentation

A 72-year-old male patient Presented on November 2019 with history of progressive shortness of breath NYHA III associated with intermittent dry cough and unintentional weight loss about 7 Kg over 3 months. He denied any history of hemoptysis, night sweat, or fever. In addition, he also noticed difficulties in swallowing solid particles. He reported No history of joint pain or skin rash. There is no family history of malignancies, no previous history of tuberculosis, no history of Autoimmune Disease, and no history of exposure to Asbestos. The patient, however, used to be a heavy smoker for about 30 years, but he quit

smoking 7 years ago. He is known case of GERD with gastroparesis and esophagitis controlled on PPI.

During the physical examination, he was alert, conscious, and oriented. His vital signs were as follows: Temperature of 37.1 C, Heart rate 87 Beats/min, respiratory rate of 17 breaths/Min, saturation 93% on room air, blood pressure of 137/85 mmHg. His chest examination revealed decrease air entry bilaterally at the bases, but no palpable lymphadenopathy was found and no hepatosplenomegaly.

Basic investigations showed normocytic normochromic anemia, normal white blood cells with normal differential, normal platelets count, and renal and hepatic profile were normal ,but his chemistries showed mild hyponatremia of 127 mmol/L, with hypercalcemia corrected Calcium is 2.6 mmol/L. His HIV , EBV and Hepatitis serology were negative , AFB and Rapid MTB Both were negative, and his ANA were positive with low titer but the rest of autoimmune workup were negative with ESR 120 mm/Hr., LDH 201 U/L.

The patient's initial chest x-ray (Figure 1) showed Bibasilar effusion more on the left side with basilar atelectasis. There is no evidence of Pneumothorax, but the computed tomography (CT) scan of the chest revealed (Figure 2) bilateral moderate to large pleural effusions. Additionally, bilateral lower lung consolidation with air bronchogram was seen, but there was no suspicious lung or pleural masses and no significantly enlarged axillary, hilar or mediastinal lymph node.

For this patient, a US guided thoracentesis was done and the analysis of the right sided Effusion as shown in **Table 1**. But during this patient's Hospital stay and with repeated chest x-ray (Figure A2), the x-ray showed worsening for the left-sided effusion, for which left sided US guided thoracentesis was done. The analysis of left sided pleural effusion is shown in **Table 2**



Figure 1



Figure 2

Table 1: Pleural fluid analysis of the Right sided Effusion

|                              |                                                        |
|------------------------------|--------------------------------------------------------|
| Appearance                   | Bloody                                                 |
| Leukocyte Count              | 7,367<br>Neutrophil 2<br>Lymphocyte 14<br>Histocyte 84 |
| RBC                          | 24,444                                                 |
| Protein                      | 52 g/L                                                 |
| LDH                          | 3,1610 U/L                                             |
| Glucose                      | <1 mmol/L                                              |
| Triglyceride                 | 0.3mmol/L                                              |
| PH                           | 7.6                                                    |
| Acid fast Bacilli            | Negative                                               |
| Fluid gram stain and culture | Negative                                               |
| Rapid MTB                    | Negative                                               |
| ADA                          | Mildly Elevated                                        |
| Cytology                     | Atypical Lymphocyte                                    |

Table 2: Pleural Fluid analysis of left sided Effusion

|                 |                                                        |
|-----------------|--------------------------------------------------------|
| Leukocyte Count | 3,717<br>Lymphocyte 25<br>Neutrophil 2<br>Histocyte 73 |
| RBC             | 22,000                                                 |
| Glucose         | 2.4                                                    |
| Protein         | 52                                                     |
| LDH             | 1,722                                                  |
| PH              | 7.6                                                    |
| AFB and Culture | Negative                                               |
| Cytology        | Atypical Lymphocyte                                    |

Flow cytometry and immunophenotyping of the right and the left sided effusion showed the following: The cell block revealed atypical CD45 positive lymphocytes. These cells are reactive for B-cell markers CD20 and CD79a. Also, they are reactive for BCL2 and MUM1. They are negative for CD3, CD30, HHV8, CD138, CD10 and BCL6. The overall findings were consistent with LARGE B-CELL LYMPHOMA.

We extensively worked him up for primary malignancy, CT abdomen showed Question abnormal wall thickening of proximal stomach pan CT showed no suspicious lesion or lymph node. And regarding the abnormal wall thickening in the stomach, he underwent EUS, and in addition to that, biopsies were taken but they were negative for malignant cells. Multiple myeloma workup is as shown in Table 3, and immunology and service marker are shown in Table 4.

The patient was referred urgently for pleural biopsy Via VAST, but he refused to be admitted. Then the case was referred to oncology service for further evaluation, where a diagnosis of primary pleural lymphoma was made.

Table 3: Multiple myeloma workup

|                  |                         |
|------------------|-------------------------|
| Protein          | 67 g/L ( normal 65-81 ) |
| Albumin          | 29 g/L ( 35-49)         |
| Alpha 1 Globulin | 5 g/L ( 2-3.8 )         |
| Alpha 2 globulin | 12g/L (4-9)             |
| Beta Globulin    | 8 G/L ( 5-10 )          |
| Gamma Globulin   | 12 g/L ( 8-16 )         |

Table 4: Immunology and service markers

|           |      |
|-----------|------|
| CD4 Count | 299  |
| IgG       | 10.8 |
| IgA       | 1.8  |
| IgM       | 5.2  |

The patient was called on January 2023 for follow-up. He was asymptomatic. However, he reported no restrictions in his daily activities. His blood works revealed normocytic normochromic anemia, Corrected Ca of 2.8 mmol/L , PTH 69 ng/L ( 50-66). His follow-up CT chest ( Figure 2A ) showed partial interval reduction of the right-sided pleural effusion, with minimal remaining residuals associated with subsegmental atelectasis. His lung window showed no abnormal infiltration or new nodules, and no enlargement of the lymph node groups. His CT abdomen and pelvis with contrast showed no manifestation of intra-abdominal lymphoma.

## Discussion

Primary pleural lymphoma is a very rare disease, most of cases were reported in Japan, and to our best knowledge, only 4 cases of these were immunocompetent (1). Furthermore, malignant lymphoma counts only 2.4% of overall primary chest wall Tumor (4), and there are two type of primary pleural lymphoma: 1) HIV related Primary Effusion Lymphoma(PEL), which can be present in any body cavity like Pleura, Pericardial and Peritoneal, and 2) Pyothorax associated primary pleural lymphoma(2). In fact, unlike Pyothorax associated lymphoma, which is mostly associated with EBV infection (2), Primary pleural lymphoma has been found/reported to be highly associated with HHV-8 infection and sporadically EBV infection.

A review of Japanese literature demonstrated that Pyothorax associated lymphoma accounts for 2.2% of patients with chronic pyothorax (3), whereas chronic pyothorax occurs because of pervious History of tuberculosis or secondary to artificial pneumothorax for pulmonary Tuberculosis (3). Additionally, most of the Primary Effusion lymphoma are Diffuse large B cell lymphoma followed by Follicular Lymphoma 60% and 20 % respectively (4). Also, PEL is more common to occur in immunocompromised patient, that is to say that the mechanism of PEL in immunocompetent host is less clear and thought to be the result of ~~from~~ aging that can cause degree of Immunosuppression / imbalance in cytokine production (5).

The pathogenesis of primary pleural lymphoma DLBCL is not yet well-known, and chronic inflammation plays an important role in the development of the disease (6). Moreover, it is suggested that either Pleural biopsy and/or pleural fluid cytological examination are the early steps in the essential diagnostic workup of pleural Effusion (7). In the case presented herein, flowcytometry and immunophenotype of the effusion showed atypical CD45 positive lymphocytes. These cells are reactive for B-cell markers CD20 and

CD79a, in addition to being reactive for BCL2 and MUM1. They are also negative for CD3, CD30, HHV8, CD138, CD10 and BCL6. The overall findings are consistent with LARGE B-CELL LYMPHOMA. Additionally, the rare cases of HHV-8 unrelated Effusion based lymphoma tend to occur in old age patients with median age of 70 years old mostly HIV negative ( 95.1% ) and immunocompetent (8).

It is important to highlight here that a similar case was reported by the Japanese Society of Internal Medicine and was treated with pleural drainage follow by R-CHOP with complete remission for 22 months (9).

### Conclusion

The report above described the first and unusual case of HHV8-unrelated Bilateral primary pleural lymphoma in an 72-year, who is (HIV) negative male patient, with no history of chronic Pyothorax, but who refused all kind of treatment, yet is still alive and with good functional status and no recurrence of the Effusion during the 3 years follow-up till 2023.

### Reference

- (1) Ahmad, H., Pawade, J., Falk, S., Morgan, J., & Balacumaraswami, L. (2003). Primary pleural lymphomas. *Thorax*, 58(10), 908.
- (2) Sun, M. L., Shang, B., Gao, J. H., & Jiang, S. J. (2016). Rare case of primary pleural lymphoma presenting with pleural effusion. *Thoracic Cancer*, 7(1), 145-150.
- (3) Hirai, S., Hamanaka, Y., Mitsui, N., Morifuji, K., & Sutoh, M. (2004). Primary malignant lymphoma arising in the pleura without preceding long-standing pyothorax. *Ann Thorac Cardiovasc Surg*, 10(5), 297-300.
- (4) Ru, X., Ge, M., Li, L., Lin, Y., & Liu, L. (2013). Primary pleural lymphoma: a rare case and a synopsis of the literature. *Journal of Thoracic Disease*, 5(4), E121.
- (5) Ascoli, V., Scalzo, C. C., Danese, C., Vacca, K., Pistilli, A., & Coco, F. L. (1999). Human herpes virus-8 associated primary effusion lymphoma of the pleural cavity in HIV-negative elderly men. *European Respiratory Journal*, 14(5), 1231-1234.
- (6) Shao, C., Guo, Y., Xu, X., Pan, D., Wang, B., Tang, Y., & Xu, S. (2018). Non-pyothorax-associated primary pleural lymphoma without pleural effusion in an immunocompetent patient: a case report and literature review. *Journal of Thoracic Disease*, 10(5), E368.
- (7) Basuthakur, S., Sarkar, A., Burman, S., & Dandale, R. (2008). A rare case of pleural lymphoma. *Lung India: Official Organ of Indian Chest Society*, 25(4), 160.
- (8) Kim, Y., Park, C. J., Roh, J., & Huh, J. (2014). Current concepts in primary effusion lymphoma and other effusion-based lymphomas. *Korean Journal of Pathology*, 48(2), 81.
- (9) Terasaki, Y., Okumura, H., Saito, K., Sato, Y., Yoshino, T., Ichinohasama, R., & Ishida, Y. (2008). HHV-8/KSHV-negative and CD20-positive primary effusion lymphoma successfully treated by pleural drainage followed by chemotherapy containing rituximab. *Internal Medicine*, 47(24), 2175-2178.