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Lymphoma Accompanying Pneumoconiosis; Case Report

Pnömokonyoza Eşlik Eden Lenfoma Olgusu

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ÖZET

Non-Hodgkin Lenfoma (NHL), en sık görülen hematolojik malignite olup Diffüz Büyük B Hücreli Lenfoma (DBBHL) en sık görülen histolojik tipidir. Elli altı yaşında erkek hasta kliniğimize 1 aydır devam edennefes darlığı vehalsizlikşikayetleri ile başvurdu. Meslek öyküsünde 30 yıldır diş teknisyenliği yaptığı öğrenildi. 2020 yılında pnömokonyoz tanısı mevcuttu. Çekilen torakal bilgisayarlı tomografide (BT)'de sol 5. kot lateral kesiminde yaklaşık 12x5 cm boyutunda, kortikal destrüksiyona neden olan, çevre yumuşak dokular ve kas planlarını invaze eden, internal kistik-nekrotik komponentler içeren heterojen yumuşak doku kitlesi izlendi. Progresif masif fibrozis için tipik olmayan radyografik görünümler nedeniyle transtorasik biyopsi yapılan hastada patoloji sonucu Diffüz B Hücreli Lenfoma olarak raporlandı. Burada mesleki karsinojen maruziyeti olan ve lenfoma ile prezente olan pnömokonyoz tanılı olguyu sunduk.

Anahtar kelimeler: Pnömokonyoz, lenfoma, meslek

ABSTRACT

Non-Hodgkin Lymphoma (NHL) is the most common hematological malignancy, and Diffuse Large B-Cell Lymphoma (DLBCL) is the most common histological type. A 56-year-old male patient was admitted to our clinic with complaints of shortness of breath and fatigue for 1 month. It was learned in his professional history that he had been a dental technician for 30 years. He was diagnosed with pneumoconiosis in 2020. On thoracic computed tomography (CT), in the lateral part of the left 5th rib, a heterogeneous soft tissue mass of approximately 12x5 cm, causing cortical destruction, invading the surrounding soft tissues and muscle planes, and containing internal cystic-necrotic components was observed. The pathology result was reported as Diffuse B-Cell Lymphoma in the patient who underwent transthoracic biopsy due to radiographic appearances that are not typical for PMF. Here, we presented a case of pneumoconiosis with occupational carcinogen exposure and presenting with lymphoma.

Keywords: Pneumoconiosis, lymphoma, occupation

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INTRODUCTION

Cancer has an etiology with complex developmental causes, in which genetic and non-genetic factors interact with each other. It is thought that the effect of genetic factors alone is around 5%. Environmental factors such as smoking, alcohol use, obesity, exposure to occupational and environmental carcinogens are responsible for the remainder. Identifying possible causative effects or contributing factors can be difficult due to the time between exposure to environmental factors and cancer development. It has been observed that the time between exposure to occupational carcinogens and the development of cancer varies according to the type of cancer. It is observed that solid tumors develop within 10-12 years after exposure, and cancers originating from the blood and lymphatic system such as leukemia and lymphoma generally develop within 3-7 years.[1] Genetics, lifestyle factors such as smoking, alcohol, diet, viral infections such as HCV, HIV, EBV, and occupational exposures play a role in the etiology of Non-Hodgkin Lymphoma (NHL). The International Agency for Research on Cancer classifies inhaled crystalline silica in Group 1 as a definitively determined agent to cause cancer in humans.[2] Here, a 56-year-old male patient with a diagnosis of dental technician pneumoconiosis, occupational carcinogen exposure and presenting with lymphoma is presented.

CASE

A 56-year-old male patient presented with complaints of shortness of breath and fatigue for one month. He has never smoked. He had no family history of cancer. It was learned in his professional history that he had been a dental technician for 30 years. He was diagnosed with pneumoconiosis in 2020 and his chest radiograph was q/t 3/3 according to the International Labor Organization (ILO) International Classification of pneumoconiosis radiographs. On physical examination, his general condition was good, his vital signs were stable, and respiratory sounds were normal on chest examination. Laboratory examinations revealed an increase in erythrocyte sedimentation rate (ESR 50 mm/h) and serum lactate dehydrogenase (LDH 368 IU/L) levels. Chest X-ray showed bilateral reticulonodular densities, a consolidated area in the right lower zone and a mass lesion of approximately 5 cm in the lateral aspect of the left 5th rib

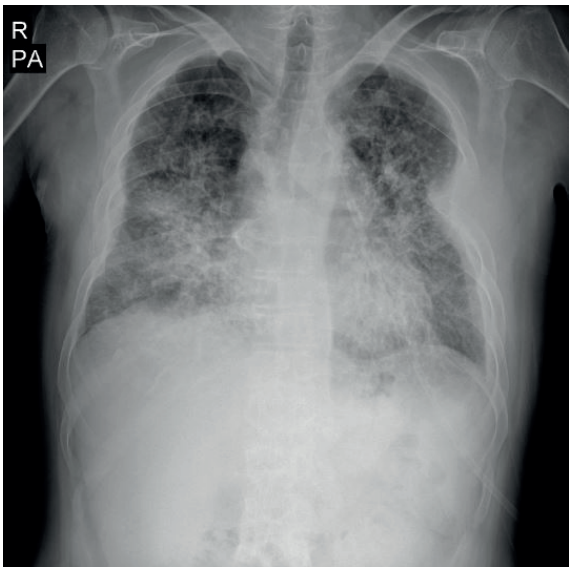

Figure-1: Chest X ray showed bilateral reticulonodular densities, consolidated area in the right lower zone and a mass lesion of approximately 5 cm in the lateral part of the left 5th rib were observed.

On thoracic computed tomography (CT), enlarged lymph nodes and lymphadenopathies (LAP) with local conglomeration and calcifications in the mediastinal, subcarinal and bilateral hilar areas were seen. Widely disseminated inhomogeneous mass-like consolidation areas, including internal calcifications, extending from the hilum to the parenchyma in both lungs, were observed more prominently in the right middle zone. Diffuse interstitial thickenings, infiltrations and centrilobular nodular density increases in both lungs, nodular consolidated areas with recessed contours and nodules and ground glass densities were observed, especially in the left upper zone. In the lateral part of the left 5th rib, a heterogeneous soft tissue mass of approximately 12x5 cm in size, causing cortical destruction, invading the surrounding soft tissues and muscle planes, and containing internal cystic-necrotic components was observed

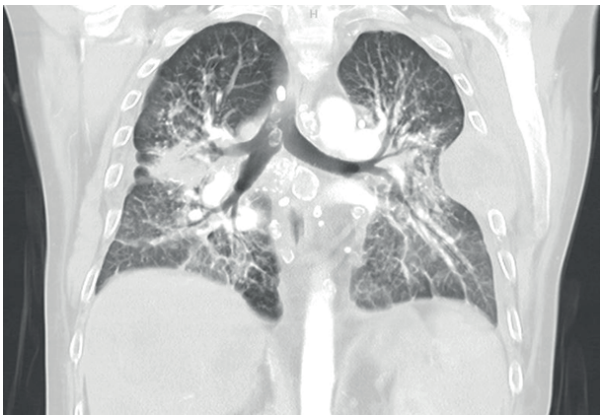

Figure-2 a,b: On thoracic computed tomography in the coronal plane showed enlarged lymph nodes and lymphadenopathies in mediastinal, subcarinal, and bilateral hilar areas with occasional conglomeration and occasional calcifications

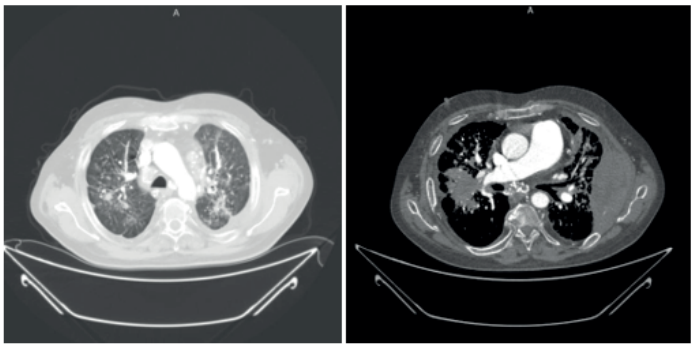

Figure-3: On thoracic computed tomography in the axial plane showed wide-spread, inhomogeneous mass consolidation areas, including internal calcifications, extending from the hilum to the parenchyma in both lungs, were observed more prominently in the right middle zone. Diffuse interstitial thickenings, infiltrations and centrilobular nodular density increases in both lungs, nodular consolidated areas with recessed contours and nodules and ground glass densities were observed, especially in the left upper zone. In the lateral part of the left 5th rib, a heterogeneous soft tissue mass of approximately 12x5 cm, causing cortical destruction, invading the surrounding soft tissues and muscle planes, and containing internal cystic-necrotic components was observed.

On abdominal CT, enlarged lymph nodes and LAPs, some of which contain calcifications, were observed in the abdomen. No endobronchial lesion was observed in the patient who underwent fiberoptic bronchoscopy. The pathology result of the patient who underwent transthoracic biopsy was reported as Diffuse B-Cell Lymphoma(D-LBCL)

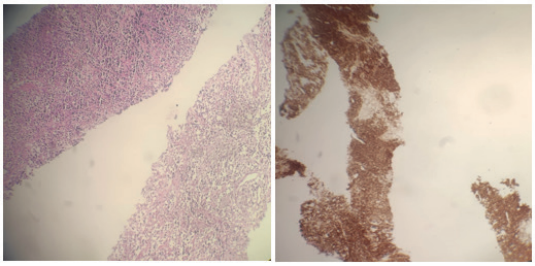

Figure-4: a Atypical lymphoid cell infiltration in the lung parenchyma (HEX100)
b CD20 positivity in atypical lymphoid cells (CD20X100)

He was transferred to the medical oncology department in terms of follow-up and treatment plan.

DISCUSSION

NHL is the most common hematological malignancy and has many subtypes. The most common histological type is DLBCL, with an annual incidence of 30%. The second most common subtype is follicular lymphoma. While the annual incidence of DLBCL is 7 per 100,000 people in the USA, it is 4.92 per 100,000 people in Europe. The incidence increases with age, the median age of diagnosis is 64 years, there is a male predominance, and 55% of the patients are male.[3,4]
Dental laboratories carry many potential occupational exposure risks for dental technicians that can have adverse effects on their health. Exposure to inhaled silica, which is a definite human carcinogen, may occur during casting, crushing, sanding, porcelain grinding and polishing in dental laboratories. In addition, solvents and mineral acids are used in tooth making. During the processes, gases, vapors, gypsum, metal alloy, as well as dust from ceramic and acrylic resin are formed. In the study by Woan et al., it was thought that genotoxic damage in lymphocytes probably developed secondary to occupational exposure to chromium, cobalt and nickel.[5,6]
Ogata et al. detected EBV-positive DLBCL developing in a patient with silicosis in 2021 and based on the data they obtained from the pathology results of this case, the reason for the development of DLBCL was based on 2 reasons. The first reason was thought to be the initiation of the transformation of EBV-infected B cells due to the imbalance between helper T cells and regulatory T cells, leading to the development of lymphoma. The second reason is that macrophages differentiate into M1 and M2 functional subtypes and cause chronic inflammation.[7]
According to their radiological appearance, pneumoconiosis is classified as simple and complicated. It is defined as simple pneumoconiosis in the presence of round or linear opacities less than 1 cm in the chest X-ray, and progressive massive fibrosis (PMF), also known as complicated pneumoconiosis, in the presence of opacities larger than 1 cm. When PMF is unilateral, it can mimic lung cancer.8,9 While PMF may develop in patients with pneumoconiosis, up to 17.9% of them have a chance of developing lung cancer and the risk of cancer is high.10,11In the study of Sarı et al., 90% of PMF lesions of 90 patients with PMF were followed bilaterally. 95% of the lesions were detected in the upper lobes. In our case, 1 lesion in the right middle lobe and 1 lesion destroying the left 5th rib were observed. The lesion observed in the left lung was pleural-based, did not contain calcification, and there was no adjacent paracicatricial emphysema. As stated in the literature, although there was no evidence of pleural band and intussusception adjacent to the lesion, it was observed that it invaded the surrounding soft tissues and muscle planes. Invasive tissue sampling was performed considering malignancy in the foreground, since radiological appearances are not typical for PMF.[12]

CONCLUSION

The patient, who had no smoking history and no family history of cancer, was diagnosed with lymphoma accompanying complicated pneumoconiosis 30 years after the onset of occupational exposure. In conclusion, although the causal relationship between silica exposure and lymphoma is not clearly defined in the current literature, a case of lymphoma accompanying pneumoconiosis has been presented before. Therefore, prospective cohort studies evaluating the environmental causes of lymphoma are needed. In addition, it should be kept in mind that new lung lesions may accompany malignancies in addition to PMF in patients with a diagnosis of pneumoconiosis.

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