

# Multiple myeloma mimicking metastatic lung cancer

## Metastatik akciğer kanserini taklit eden multipl miyelom

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Multiple myeloma is a hematological malignancy characterized by a clonal proliferation of plasma cells in the bone marrow. Extramedullary dissemination of multiple myeloma is uncommon. Only in rare cases, the malignant plasma cells of multiple myeloma had infiltrated the lung parenchyma. In this case report, we presented a case of multiple myeloma with lung plasmacytoma, in a 42-year-old patient, hospitalized for pain and infiltrative mass in the right lung. The results of his initial evaluation with computed tomography and positron emission tomography scanning, resembled lung tumor with bone metastasis. Surprisingly, biopsies from lung tumor and bone metastasis, revealed malignant plasma cells. We found M spike in protein electrophoresis and lambda monoclonal band in immune electrophoresis. A bone marrow biopsy evaluation was done and justified multiple myeloma diagnosis before hematology referral. Multiple myeloma diagnosis at the age of 42 is quite rare.

**Keywords:** Cancer; lung; metastasis; myeloma.

Multipl miyelom kemik iliğinde plazma hücrelerinin klonal proliferasyonu ile karakterize hematolojik malign bir hastalıktır. Multipl miyelomda ekstramedüller yayılım sık değildir. Çok nadir olgularda multipl miyelom nedeni plazma hücreleri akciğer parankimini infiltre eder. Bu yazıda, sağ akciğerde infiltratif kitle ve ağrı nedeniyle hastaneye yatırılan, akciğer plasmositomlu multipl miyelomu olan 42 yaşında bir hasta sunuldu. Bilgisayarlı tomografi ve pozitron emisyon tomografisi ile yapılan ilk değerlendirmede kemik metastası olan akciğer tümörüne benzetildi. Akciğerdeki tümörden ve kemikteki metastastan yapılan biyopside sürpriz olarak malign plazma hücreleri görüldü. Protein elektroforezinde M spike ve immün elektroforezde monoklonal lamda bandı bulundu. Kemik iliği biyopsisi yapıldı ve multipl miyelom tanısı konarak hematolojiye refere edildi. Multipl miyelom 42 yaşında nadir görülür.

**Anahtar sözcükler:** Kanser; akciğer; metastaz; myelom.

Multiple myeloma (MM) is a hematological malignancy characterized by a clonal proliferation of plasma cells in the bone marrow. It is a common disease, which is accounting for about 10% of all hematologic malignancies in the United States.

Extramedullary dissemination of multiple myeloma is uncommon. Only in rare cases, the malig-

nant plasma cells of multiple myeloma had infiltrated the lung parenchyma.

### CASE REPORT

A 42-year-old male patient presented in our outpatient clinic with the complaint of right sided chest pain. There were no weight loss, fever, sweating or cough. He smoked cigarettes 70 packs/year.

Presented at the İstanbul University Internal Medicine Days (2013, Sapanca, Turkey).

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On his physical examination; his blood pressure was 130/80 mmHg, heart and lung sounds were normal. There were no prominent lymph node enlargements. Also there were no significant pathological findings in abdominal examination. There was no visible mass in his chest wall. His medical history was also insignificant. Results of his routine blood tests were as follows:

Hb, 14.2 g/dL; platelet count, 228x10<sup>9</sup>/L; and white blood cell (WBC), 13.6x10<sup>9</sup>/L (segmented neutrophil, 51.3%; lymphocyte, 35.8%; monocyte, 8.9%; and eosinophil, 3.09%); ESR: 83 mm/h CRP: 149 mg/L (normal range <8.2); Creatinine, 0.95 mg/dL (reference range, 0.6–1.2 g/dL); Lactate dehydrogenase, 254 U/L (reference range, 125–243 U/L). AST-ALT, ALP were normal.

Computed tomography (CT) (GE Hangwei medical system Co. Beijing P.R.China) examination of the chest revealed a right lung mass with sternal and vertebral metastases (Fig. 1).

This mass was a lobulated tumour, located at the anteriobasalis of the right lung upper lobe with a dimension of 97x65 mm in diameter. It had been extended anteriorly to pectoralis muscle margin, destructing 3<sup>rd</sup> and 4<sup>th</sup> ribs. It had manibrium sterni metastasis of 4x4.5 cm in diameter and a lytic mass in T11 vertebrae.

A consecutive Positron emission tomography imaging with flurodeoxyglucose (FDG PET/CT)

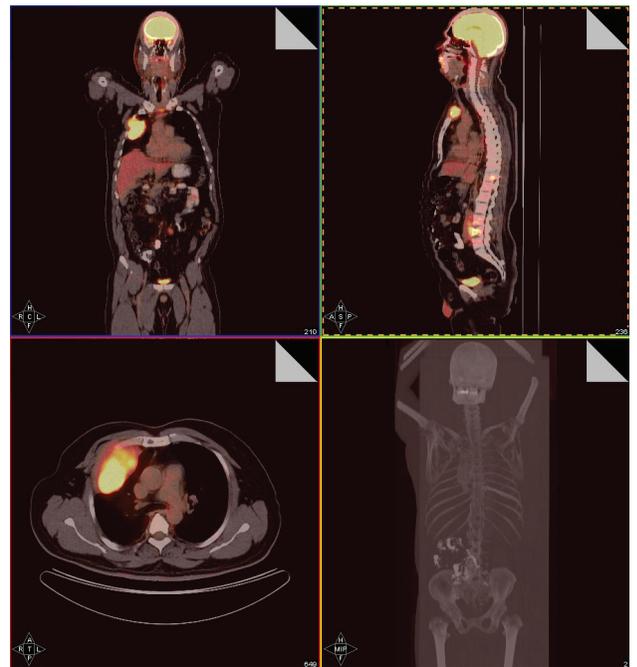


**Fig. 1.** Right lung mass at initial CT.

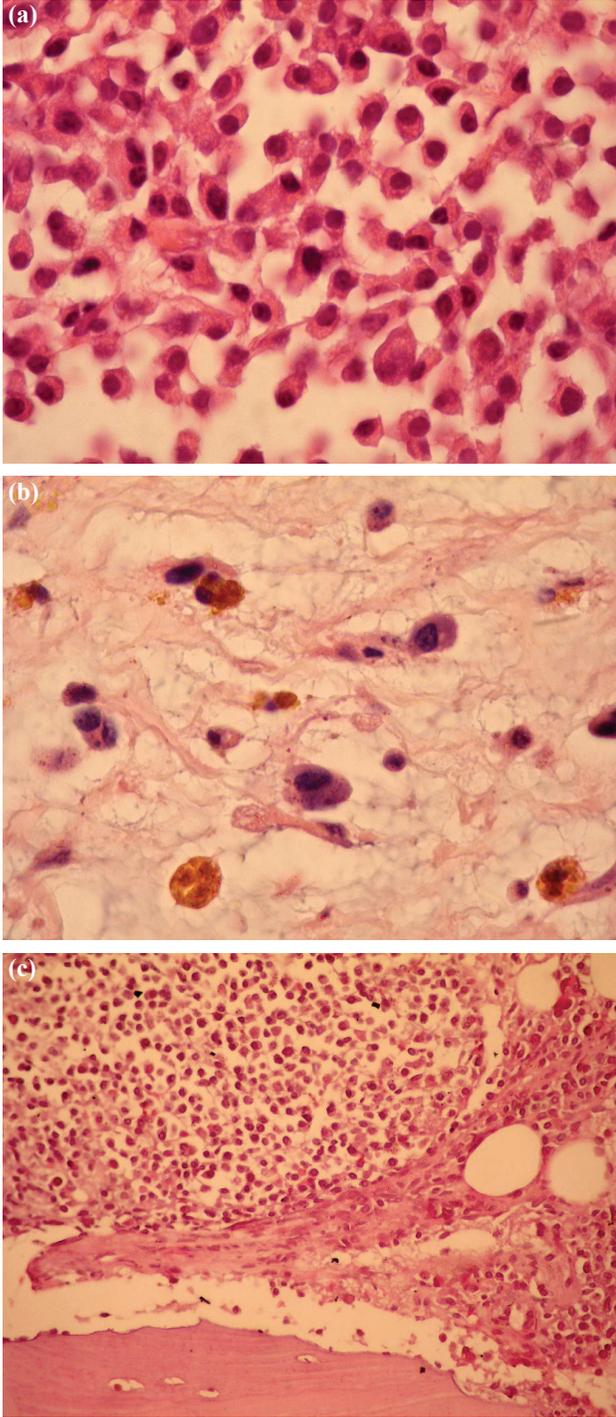
(Siemens biograph 2 LSO Germany) was performed. It also showed a malignant hyper metabolic mass of 95x60 in diameter (SUV max: 12.7), located at the anteriobasalis of the right lung upper lobe which had been extended anteriorly to pectoralis muscle margin, destructing 3<sup>rd</sup> and 4<sup>th</sup> ribs. It also revealed hypermetabolic destructive bone lesions at manibrium sterni (SUV max: 8.0), right humerus shaft (SUV max: 15.0), T11 (SUV max: 5.9) and L4 vertebrae (SUV max: 6.4). There were partly hypermetabolic, mostly sclerotic and ametabolic widespread skeletal areas of malignant lesions. There were bilateral pleural effusions mainly considered as malignant and mediastinal reactive lymph nodes. Also there were hypermetabolic lymph nodes at L4 vertebrae level which were considered as metastasis (Fig. 2).

CT guided multiple biopsies were taken from the lung mass and the metastatic lesion of vertebrae.

Tru-cut biopsy of right lung mass, Malignant tumour with plasma cells (Plasma cell myeloma) (Fig. 3a) and biopsy from L4 vertebrae showed



**Fig. 2.** PET/CT showing the malignant hyper metabolic mass at the anteriobasalis of the right lung upper lobe with hypermetabolic destructive bone lesions at manibrium sterni, right humerus shaft, T11 and L4 vertebrae.



**Fig. 3.** (a) Biopsy from right lung mass: x400 magnification, H&E dye Diffuse tumoral infiltration, showing plasmacytoid cellular morphology. (b) Lumbar vertebrae biopsy: X1000 magnification, H&E dye Atypical tumoral cell infiltration showing plasmacytoid morphology in fibrohyaline tissue. (c) Bone marrow biopsy: Showing plasma cells infiltrating 90% of bone marrow space.

degenerated bone trabeculae with atypical plasma cells (Fig. 3b).

Right after the surprising results of the pathological evaluation, protein and immune electrophoresis were done. Their results were as follows;

Total protein: 5.3 (reference range, 6.4–8.3 g/dL); Albumin, 2.52 g/dL (reference range, 3.5–5.2 g/dL); Alfa 1: 4.65% (2.2–4.6) Alfa 2: 22.79% (8.2–12.5) Beta 1: 9.8% (7.2–14.2) Gamma: 15.2% (11.5–18.6) M spike: 2.94 g IgA: 11.2 (40–350), IgG: 390 (650–1600), IgM: 11 (50–300), kappa light chain: 66 (170–370) and lambda was measured at to 424 mg/dl (reference range, 90–210 mg/dl).

In the gel electrophoresis revealed a monoclonal band in lambda antisera and lambda FLC was measured at to 424 mg/dl (reference range, 90–210 mg/dl).

Results were consistent with multipl myeloma, so a bone marrow biops was performed.

The result of bone marrow biopsy showed CD38, CD56 and lambda positive, kappa negative plasma cells infiltrating 90% of bone marrow space. Conclusion was plasma cell myeloma showing monoclone of lambda light chain (Fig. 3c).

Based on these results, the patient was diagnosed as multipl myeloma with extramedullary dissemination, primarily into the lung.

The patient was referred to the hematology department for chemotherapy. After treatment bone marrow biopsy revealed total cure. Patient's follow up is still going on in hematology outpatient clinic.

Multiple myeloma is rare in young population. Plasmacytoma resembling metastatic lung cancer in the young is very rare. In that manner, we decided to present this case.

## DISCUSSION

Plasma cell myeloma (PCM) is a malignant hematologic disease characterized by the proliferation of neoplastic plasma cells, producing excessive amounts of monoclonal immunoglobulin (Ig)

or light chain.<sup>[1,2]</sup>

Although plasma cells are widely distributed throughout the body, PCM is found most often within the bone and bone marrow (BM), while the dissemination of extramedullary plasmacytoma into the lung has been reported to be very rare.<sup>[3]</sup>

MM establishes 27% of all biopsied bone tumors, and 1% of all malignancies.<sup>[4,5]</sup> It is seen typically between ages 50 to 70 and it is rare before the age of 40.<sup>[4]</sup> It is seen twice as much in men than in women.

Classically, PCM occurs mainly in BM-rich bone.<sup>[6]</sup> Therefore, primary clinical presentation includes bone pain, and anemia.<sup>[7,8]</sup>

Extramedullary plasmacytomas have been reported in 15–20% of patients at diagnosis and in an additional 15% during the course of PCM, and these patients are often associated with high-risk diseases like myelomatous pleural effusion (MPE).<sup>[9]</sup>

Extramedullary existence of plasmacytoma is not common and the incidence of thoracic cases is low, especially in patients presenting with pulmonary plasmacytoma and malign pleural effusion to simulate a pleural mesothelioma or lung cancer.<sup>[6,10]</sup>

We report here a unique presentation of PCM to include monoclonal components and lung plasmacytoma as initially mistaken for metastatic lung cancer.

In this case, a precise diagnosis of PCM is difficult when only clinical and imaging studies are conducted. In order to discriminate extramedullary PCM from other malignancies, biochemical assays such as electrophoresis are very helpful to confirm the presence of monoclonal components when performed along with pathologic examinations of the mass and bone marrow.

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