An Isolated Skeletal Muscle Metastasis from Lung Adenocarcinoma

Abstract

Lung cancer is one of the leading causes of cancer deaths worldwide and despite advances in treatment and diagnostic techniques, the mortality rates remain high. We report here an 80-year-old male patient with lung adenocarcinoma. The patient underwent a lower left lobectomy and chemotherapy. After 12 months, an isolated skeletal muscle metastasis from a primary lung adenocarcinoma in the left semitendinosus and semimembranosus muscles was detected. The patient is alive without any signs of new metastases after 18 months from the completion of combination therapy consisting of metastasectomy and chemoradiotherapy.

Key words: Adenocarcinoma, lung cancer, skeletal muscle metastasis.

Özet


Anahtar Sözcükler: Adenokarsinom, akciğer kanseri, çizgili kas metastazı.

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Cancer is a major public health problem in the world. Despite improved diagnostic methods, and advanced therapeutic modalities including surgery, chemotherapy, and radiotherapy, survival rates remain low. Lung cancer remains the leading cause of cancer-related death in the United States, accounting for 28% of all cases and 5-year combined survival rates for all stages of lung cancer are at 16% (1). Lung cancer metastasize via hematogenous or lymphatic ways commonly to bone, brain, adrenal glands and liver which are rich in capillary vasculature. Isolated metastasis to skeletal muscle originated from non-small cell lung cancer is extremely rare phenomenon, we report here an 80 year-old male patient with lung adenocarcinoma presented with a single metastasis located in semimembranous and semitendinous muscles after one year from a curative therapy. This is a unique case in the literature.

CASE
An 80-year-old man with a 43 year smoking history presented with cough and weight loss. A chest radiograph revealed a well-defined opacity in the left hilar region (Figure 1). A contrast enhanced computed tomography (CT) scan was performed which showed a 3x3 cm sized mass in the left lower lobe that did not involve the mediastinal structures (Figure 2). The stage of the patient was in T2N0M0 stage during diagnosis. He underwent left lower lobectomy and 2 cycles of chemotherapy with cisplatin and docetaxel regimen. After 12 months from surgery, he admitted to clinic with painful, solid palpable mass and well circumscribed swelling located at the back of the thigh. Magnetic resonance imaging (MRI) revealed 3x2.5 cm diameter mass in left semimembranous and semitendinous muscles (Figure 3 and 4). Positron emission computed tomography (PET-CT) revealed an isolated metastasis with a 9.5 SUV max value in same region correlated with MRI results (Figure 5) Incisional biopsy was performed and a final histological diagnosis of the tumor was skeletal muscle metastasis of primary lung adenocarcinoma (Figure 6 and 7). The patient underwent metastasectomy by orthopedic surgery and subsequently 4 cycles of chemotherapy with cisplatin and docetaxel was performed. Regional 40 Gy radiotherapy was given in 15 fractions to reduce the risk of local regional tumor relapse. This patient is alive 18 months after completion of therapy without any signs of new metastases.

DISCUSSION
Lung cancer is the main cause of cancer related deaths. During the first diagnosis and treatment period, most of the patients with lung cancer already have some kind of metastasis. Lung cancer metastasize via hematogenous or lymphatic ways commonly to bone, brain, adrenal glands and liver which are rich in capillary vasculature. Although muscle tissue makes up approximately half of total body weight, metastatic extension to the skeletal...
muscle is an exceptional event in neoplasms, with an incidence of 0.8 to 1.5% in autopsy series (2-5). Lung cancer seems to be the underlying primary cancer in most of these cases. Skeletal muscle is resistant to tumoral invasion (6). Isolated metastasis to skeletal muscle from a primary lung cancer is extremely rare. There are a few reports described in the literature. Muscular contractile actions, lactic acid accumulations and protease inhibitors affect the blood flow and inhibit the growth of tumor cells in the muscles and this may contribute to the rarity of this phenomenon (7).

Skeletal muscle metastasis is deep in location and the most frequent presentation of muscular metastasis is pain and local swelling as demonstrated in our patient (8). Advanced radiological techniques such as MRI, PET-CT and histological confirmations are necessary for skeletal muscle metastasis in clinical suspicions. Even if surgically treated, most of the patients with intramuscular metastasis die within a year. Treatment modalities including combination or any of radiotherapy, chemotherapy and metastasectomy often provides palliation only (8).

This case highlights the importance of histologic diagnosis despite clinical and radiologic findings supportive of soft tissue sarcomas. In addition, recurrence after resection of non-small cell lung carcinoma is generally associated with a poor prognosis and this case report
also adds further information to the literature that is an isolated skeletal muscle metastasis from a primary lung adenocarcinoma and treated by chemotherapy and radiotherapy after metastasectomy without any recurrence within 18 months period.

**Figure 6:** Adenoid structures lined by atypical cells with a large hyperchromatic nuclei and some of them with dense nucleolus in desmoplastic stroma (HEX200).

**Figure 7:** A cytology obtained from the lesion was consistent with adenocarcinoma in the immunohistochemistry study stained positively by thyroid transcription factor 1 (TTF1) showing that metastasis from primary lung cancer (TTF1X200).

There is no consensus on the optimal treatment strategy for skeletal muscle metastasis (3,6). But due to their clinical and radiological appearance, skeletal muscle metastasis is similar to soft tissue sarcomas. We conclude that a more aggressive approach might be considered for selected patients with a solitary muscular metastasis from lung cancer and combined therapies may offer potentially curative results as we reported here.

**CONFLICTS OF INTEREST**
None declared.

**REFERENCES**


