

Synchronous lung cancer cases

Senkron akciğer kanseri olguları

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Synchronous tumor is described as two different tumors presenting at the same time in the same organ. Pulmonary tumors existing in different lobes or different sides of the lungs at the same time are defined as pulmonary synchronous tumors. We describe three different cases that were diagnosed by different methods and that had different clinical outcomes. Within the first case, the second tumor was determined while the patient was receiving chemotherapy. In the second case, the tumor was diagnosed by flow cytometric examination. And in the third case, the tumor was diagnosed intraoperatively by frozen section. Synchronous tumors are uncommon, they occur in 1-2 % of all bronchial carcinomas. Concerning the better survival rates of surgical treatment, the possibility of synchronous tumor should be remembered in the cases that have separate lesions.

Key words: **Lung cancer, pulmonary, synchronous tumor**

Senkron tümör tanımı, bir organda aynı anda iki farklı tümör saptanması olarak özetlenebilir. Akciğerlerde aynı anda farklı lokalizasyonlarda pulmoner tümör saptanması durumunda pulmoner senkron tümörden bahsedilir. Bronş karsinomu serisi içinde karşılaşılan üç pulmoner senkron tümör olgusunu, tanı aşamasındaki ve klinik seyirlerindeki farklılıklar nedeniyle sunulması amaçlandı. Birinci olgu; akciğer kanseri tanısı ile kemoterapi protokolünde iken ikinci tümör saptandı. İkinci olguda senkron tümör tanısı preoperatif "flow-sitometrik" inceleme ile ortaya konuldu. Üçüncü olguda ise senkron tümör tanısı ameliyat sırasında "frozen" biyopsi ile ispatlandı. Oldukça seyrek olarak görülen senkron tümörler tüm akciğer kanserlerinin yaklaşık % 1-2'sini oluşturmaktadır. Birden fazla kitle ile başvuran olgularda senkron tümör olasılığı akılda tutularak, olgulara cerrahi tedavi şansı verilebilmekte ve cerrahi olmayan tedavi protokollerine göre daha uzun bir sağkalım şansı sağlanabilmektedir.

Anahtar kelimeler: **Akciğer kanseri, pulmoner, senkron tümör**

Lung cancer is one of the most common causes of death associated with cancer. Five year survival rate of surgical treatment is better than medical treatment (1,2). Synchronous tumors are described as two different tumors presenting at the same time in the same organ. Pulmonary tumors existing in different lobes or different sides of the lungs at the same time are defined as pulmonary synchronous tumors (3).

However surgical management of synchronous tumors is still controversial. Synchronous tumors are uncommon, occurring in 1-2 % of all lung cancers (2). In the literature 5-year survival rate of pulmonary synchronous tumors is reported between 0 % and 6 % (1, 2,4).

In this study we report three different non-small cell pulmonary synchronous tumors and try to argue the role of surgical management.

Case 1

A 58-year-old man was admitted with dyspnea. Computed tomography (CT) of the chest demonstrated a peripherally located 6x4x2 cm mass in the left lower lobe.

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Transthoracic fine needle aspiration biopsy revealed adenocarcinoma. Brain CT revealed 1 cm. hypodense mass in the left posterior parietal region. Abdomen CT showed no abnormality. As the bone scan of the patient demonstrated a metastatic lesion in the seventh thoracic vertebrae chemotherapy was administered.

Control CT of the patient demonstrated another lesion in the right upper lobe, regression of the mediastinal lymph nodes and regression of the lesion located in the left lower lobe. The second control CT of the patient demonstrated regression of the lesion located in the left side but progression of the lesion located in the right upper lobe. Indeed a 3x2 cm pretracheal lymph node was detected. Transthoracic fine needle aspiration biopsy of the lesion located in the right upper lobe was reported as epidermoid carcinoma. In conclusion chemotherapy was administered with the diagnosis of synchronous lung cancer.

Case 2

A 63-year-old man was presented to our hospital with dyspnea and chest pain. Physical examination revealed clubbing of the nails. Chest X ray demonstrated two different opacities in the left lung (Figure 1).

CT of the chest demonstrated a 5x4x4 cm soft tissue lesion in the left upper lobe and a 2x2x2 cm lesion in the left lower lobe (Figure 2, 3). Respiration function tests were FVC: 2.74 L (%65), FEV1: 1.99 L (%61), arterial blood gas analysis showed pO₂: 69.2, pCO₂: 37.3, SO₂: 95.1 %. Two separate endobronchial lesions were detected one in the left lower lobe bronchus and one in the left upper anterior segment bronchus on bronchoscopy. Specimens



Figure 1. Chest X-Ray of the patient.

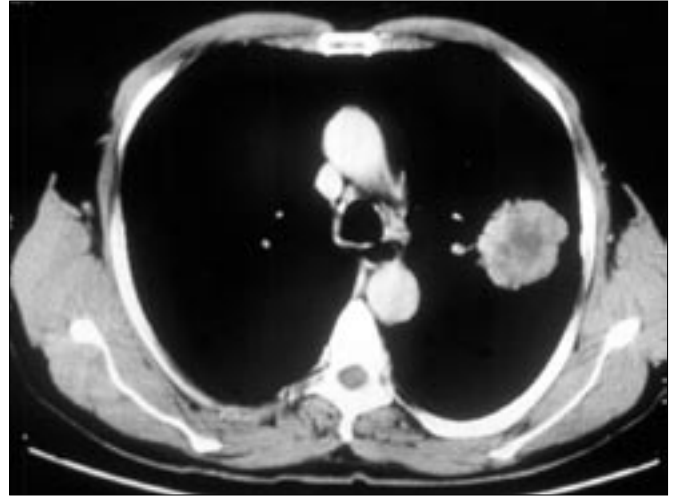


Figure 2. CT of the mass in the left upper lobe.

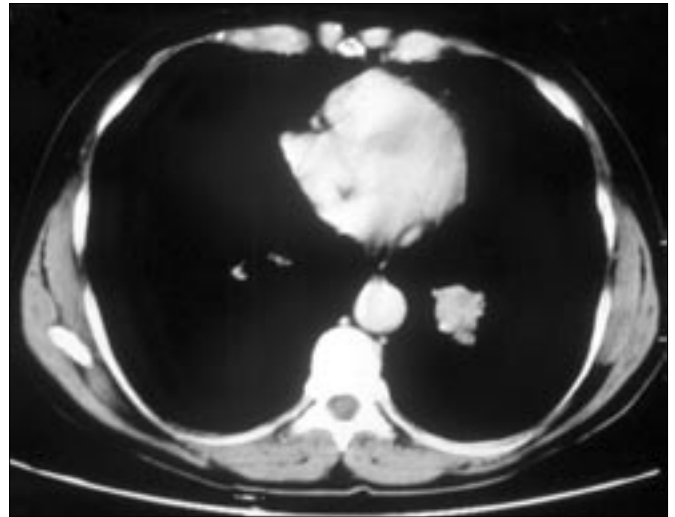


Figure 3. CT of the mass in the left lower lobe.

for histopathological examination were taken from each lesion. The histopathologic examination was reported as squamous cell carcinoma. Although these tumors have similar ploidy features, the proliferation of the left lower lobe tumor was found higher than the other tumor at the flow cytometric examination.

Brain-abdomen CT and bone scan revealed normal. Thoracotomy was performed with the diagnosis of pulmonary synchronous tumors. On exploration 4x4x5 cm lesion in the upper lobe and 3x3x3 cm lesion located peribronchially in the lower lobe were detected. Pneumonectomy and systematic nodal dissection were performed.

Histo-pathologic examination of the lesion located in upper lobe was reported as adenosquamous carcinoma and the other tumor was reported as moderately differentiated squamous cell carcinoma. As the pathologic examination showed no nodal involvement each tumor was evaluated as

stage I. However the tumor in the upper lobe was revealed to be T2, N0, M0 and the other was T1, N0, and M0.

During follow up, all control CT's were normal until the postoperative 21st month. The control abdominal CT revealed a hypodens lesion in the liver, bilaterally adrenal hyperplasia and multiple paraaortic lymphadenopathies. Biopsy of the lesion was reported as metastasis of adenocarcinoma, and it was thought as a primary tumor originated from the stomach. Furthermore primary gastric tumor was seen on endoscopy. Chemotherapy was planned for the patient. However the patient died because of the complications of gastric carcinoma on 28th month follow up.

Case 3

A 59 year-old-man admitted with a 2 year history of cough. Chest X-Ray showed two different lesions in the right hemithorax (Figure 4).

Thorax CT revealed 3x3x3 cm. lesion located inferiorly in the right upper lobe and another 7-cm. lesion in the laterobasal segment of the right lower lobe (Figure 5,6). Brain-abdomen CT and bone scan showed no abnormality.

On preoperative bronchoscopic examination, an endobronchial lesion was detected in the anterior segment bronchus of the right upper lobe. Biopsy of the lesion was reported as squamous cell carcinoma. Respiration function tests of the patient were FVC: 85.2 %, FEV1: 86 % and



Figure 4. Chest X-Ray of the patient.

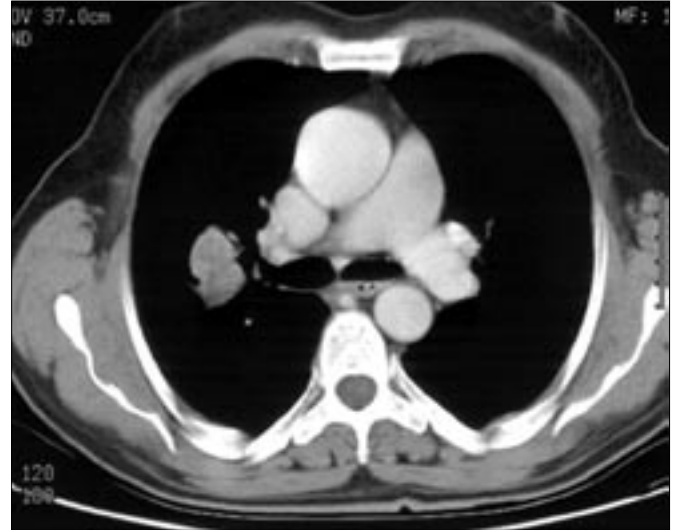


Figure 5. CT of the mass in the right upper lobe.

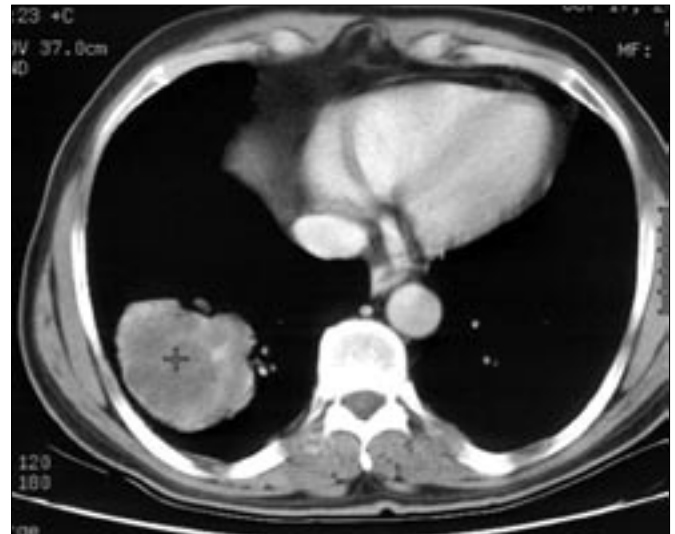


Figure 6. CT of the mass in the right lower lobe.

arterial blood gas analysis showed PO₂: 77, PCO₂: 38.6, SO₂: 94.4.

Right thoracotomy was performed with the possibility of synchronous tumors. On exploration, a 5-cm. lesion in the left upper lobe and another 8x9x5 cm. lesion in the lower lobe were detected. As the frozen section of the lesion located in the lower lobe was reported as adenocarcinoma, right pneumonectomy and systematic nodal dissection were performed. Histopathological examination was reported as adenosquamous carcinoma for the lower lobe tumor, squamous cell carcinoma for the upper lobe tumor. Resection margins were negative, squamous tumor cells were detected on paraesophageal lymph node. He was asymptomatic on 18th month follow up.

Discussion

Carcinoma of the lung is the leading cause of cancer death in countries whose statistical analyzes are reliable (3, 5). Synchronous tumors, which are described as multiple primary tumors, are very rare (1, 2, 4, and 6). The most common site for these tumors is breast. Advances in surgical managements and diagnostic methods for carcinoma of the lung lead to an increase in the rate of synchronous tumors (2, 6).

Tobacco smoking and asbestosis are the most common occupational causes of lung cancer (1, 7, and 8). Also it is obvious that similar exposures can cause similar effects on same tissues (8). By the way, detection of multiple lesions of the lungs at the same time should be considered (1, 2, 7, and 8). In some series, detection of a secondary primary tumor for the patients who survives more than 3 years was found to be 10 % (1, 4).

Metastatic disease increases the grade (Grade IV) and decreases overall lifetime in lung cancer. However, a second lung cancer with different histologic features should be considered as synchronous and should be staged separately. Differentiation of these clinical entities is important in terms of surgical vs. medical management and prognosis (3, 5).

When more than one lesion was detected in a patient and if there is enough evidence that the second lesion is not metastatic then the possibility of synchronous tumor should be kept in mind. In such cases, separate biopsies should be taken from both lesions. When it is impossible to reach the lesion with bronchoscopy, transthoracic biopsy might confirm the diagnosis. DNA flow cytometry can be used to differentiate between two synchronous cancers of the same histologic condition (8, 9).

Most authors suggested that after the diagnosis, the two tumors should be staged separately and surgery should not be performed for the tumors having larger grades than grade II (4, 10-12).

In bilaterally lesions wedge resection and segmentectomy are the preferred methods. However, for ipsilaterally

lesions surgical methods such as pneumonectomy were applied in some studies (1, 2, 10, 13).

Postoperative survival in synchronous lung cancer having complete resection has a wide range in different studies. Five year survival was 6 % in Carey (14)'s study and 44 % in Rosengart (7)'s study. However, all cases in every stage were evaluated in these studies. In Pompier (6)'s series, grade I and II cases were evaluated and 5 year survival was found 38 % after complete resection. In this study, 5-year survival was 33 % for the tumors with same histologic types while it was 17 % for the tumors with different histologic types (2).

The cases in which more than one tumor is detected radiologically, the possibility of a synchronous tumor or a metastasis of the primary tumor must always be kept in mind and histopathologic diagnosis should be done for both tumors (14). Complete resection should be performed if feasible. For synchronous tumors with lower grades, with early surgical intervention, the survival can be as long as solitary lung cancers especially in epidermoid carcinoma (15).

In recent years genetic investigations showed that environmental conditions have an influence on the development of cancer (16). Besides, smoking and asbestosis are the most common occupational causes of lung cancer. For patients who have similar genetic and environmental conditions, there is a possibility of developing tumor in multiple foci.

With the help of developments in treatment of cancer, for the patients who had long overall survival or had cure with the treatment of primary cancer, the possibility of finding a second tumor (metachronous tumor) increases. Simultaneous discovery of tumors, like larynx and bladder tumors which are related to tobacco, with the lung cancer is possible. Therefore, it is important to keep in mind that, especially for the cases T1-2 N0, the lesions that are accepted as pulmonary metastases may be synchronous tumors.

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