



Cutaneous metastasis as the first sign of lung cancer

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SUMMARY

Cutaneous metastases of lung tumors are occurring in 1-12% of cases. High prevalence of lung cancer increases the likelihood of finding these changes in clinical practice. They are usually in the form of a firm, mobile and painless nodule on the head, neck and chest, and their appearance is a sign of advanced disease. Cutaneous metastases are rarely the first sign of malignancy. A 62-year-old patient presented to her doctor a fast-growing nodule on the forehead. Extirpation of the nodule and further diagnosis showed that it was a metastasis of small cell lung cancer localized in the right lung with extensive metastases to the contralateral lung, liver and spine. Cutaneous metastases may be the first sign of malignancy or the first sign of progression of already diagnosed malignancy. A diagnosis of metastatic disease should be considered in patients with risk factors or a known cancer. The presence of a skin metastasis in a patient with a lung cancer indicates poor prognosis.

Key words: Lung Neoplasms; Small-Cell Lung Carcinoma; Neoplasm Metastasis; Skin Neoplasms

INTRODUCTION

Cutaneous, subcutaneous and metastases in superficial lymph nodes are not a common finding in lung cancer, and most studies estimated their incidence at 1-12% (1, 2) but they can be encountered in clinical practice because of the high prevalence of this malignancy which is the second most common in both sexes, right behind breast cancer in women and prostate cancer in men. Annually, worldwide, more women die from lung cancer than from breast cancer (3). In Serbia, it takes the first place at the mortality list for malignant disease in men (29.2%) and the third in women (10.3%) (4).

Small cell lung cancer (SCLC) has clinical and biological characteristics that make it distinct from the other cytological types of lung cancer, called non-small cell lung cancer. It is characterized by rapid and aggressive growth with early onset of distant metastases, often present paraneoplastic syndromes and good therapeutic response to chemotherapy and radiotherapy. SCLC accounts for about 15% of newly diagnosed cases of lung cancer, most commonly affects people aged between 55 and 65 (3). So far, two etiological factors are confirmed for SCLC. First is definitely smoking, 98% of the patients with SCLC are smokers, such strong correlation exists only in the epidermoid lung cancer. In the second place by incidence of SCLC are uranium miners, where the incidence of all cancers is increased but majority are SCLCs. Disintegration of uranium creates radon which has been confirmed as the etiological factor of SCLC.

A clinical presentation of lung cancer is the result of local tumor growth, invasion and obstruction of adjacent structures, the tumor growth in the regional lymph nodes, the presence of distant metastases, and the direct effects of tumor secretion – paraneoplastic syndrome. Extrathoracic metastases are present at autopsy in 95% of SCLC, they can occur in all organs and tissues, mainly in the central nervous system (5), where the signs are headache, vomiting and neurological disturbances, bone – with pain and pathological fractures, liver – with hepatic insufficiency, biliary obstruction, pain and anorexia. Metastases in the spine can cause compression syndrome (5). All tumors with potential to disseminate in a number of organs may metastasize in the skin, majority of cutaneous metastases in men are from lung cancers and they are in the second place in women (after the breast cancer) (1, 6-8). Cutaneous metastases

as the first sign of malignancy are most common with lung, kidney and ovarian cancer (9). Between 65 and 70% of the patients had an advanced disease in time of diagnosis. In untreated patients with an advanced disease, median survival is 6 weeks while in localized disease it is 12 weeks. Median survival of treated patients is 20 months (five years survival rate is 20%) and in case of the advanced disease 12 months (two year survival rate is 4.6%). Relapse, weight loss and frequent hospitalizations are a sign of poor prognosis (3). The presence of skin metastases is a poor prognostic sign with a median survival of 2-4 months (8, 10, 11).

CASE REPORT

A 62-year-old patient visited a physician because of a rapidly growing forehead nodule that appeared two months earlier. Examination elicited a solid, mobile and painless bluish nodule in size of 2x2cm, near the right forehead midline. There were no other similar changes in other parts of the body, no facial edema, nail clubbing, or palpable lymph nodes. The patient denied recent body weight loss and other general disease symptoms. As a longtime smoker (smoking for 35 years, 30-40 cigarettes a day) she gave no importance to intermittent productive cough, there was no history of hemoptysis. The patient underwent biopsy of nodule in regional medical center and the pathologist classified a sample as the anaplastic SCLC. Immunohistochemical examination of a sample in a tertiary medical institution showed a metastatic neuroendocrine cancer, which most likely originated from the lungs. Chest radiography (Figure 1) shows atelectasis of the right upper and middle lung lobes with tracheal deviation to the right. Axial skeleton radiography showed no signs of secondary deposits. A computed tomography scan (CT) revealed a right, near carina, soft tissue mass of 35x20 mm that could not be distinguished from the right third bronchopulmonary segment atelectasis and mediastinal lymphadenopathy (Figure 2A). Tumor change occluded the vena cava, a segmental branch of the right pulmonary artery and bronchus of the right upper lobe. In the first and the second bronchopulmonary segment of the left lung, a spiculated soft tissue with density of 26x19mm was determined (Figure 2B) and in the ninth bronchopulmonary segment of the left lung, a lobular mass of 23x20 mm was also detected (Figure 3A). A CT scan also showed mediastinal shift to the right.

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List of abbreviations:
Computed Tomography scan – CT
etoposid / cisplatin – EP
Small Cell Lung Cancer – SCLC
Superior Vena Cava – SVC

In all presented vertebral bodies, there were zones of low bone density (max 5mm) without a sclerotic rim. There is a partial destruction of the front part of the first right rib and soft tissue secondary deposit in the anterior chest wall. A liver CT scan showed numerous secondary deposits, the largest in the fourth segment with 62x56mm (Figure 3b). The patient declined a proposed bronchoscopic examination.

Oncology council decided on EP (etoposid / cisplatin) protocol application.

DISCUSSION

Cutaneous nodule can only in rare instances lead to the diagnosis of lung cancer (9, 12). All histological types of lung cancer can metastasize in skin, statistically the most prevalent histologic types are adenocarcinomas (12) and among the rarest is SCLC. Generally, the lower the degree of tumor cells differentiation, the greater is the probability of cutaneous metastasis occurrence (2, 13, 14). A usual localization of the primary tumor is the upper lobe (1, 15). The most common sites of metastases are the chest wall, abdomen, neck and scalp. (2, 16, 17) The skin metastases are typically in the form of firm, solitary, fast growing and mobile, nodules (14, 16) while ulcerant forms are rare (13). They occur primarily on the same side as the primary tumor (14). „Punch” biopsy of nodules is recommended. It may readily establish the diagnosis and offer some important prognostic information. Skin lesion monitoring may serve as an indicator of chemotherapy response (12), although the tumor cell sensitivity is lower because skin has poor blood supply. (13) Local tumor growth leads to obstructive manifestations of the disease. A central localization of the SCLC tumor and rapid growth and metastases to regional lymph nodes contributes to rapid development of superior vena cava (SVC) syndrome (5, 12). A common early symptom is hoarseness due to compression or the infiltration of recurrent laryngeal nerve. During the first examination of the patient, SVC syndrome was absent, the first symptoms in the form of face swelling and markedly dilated upper chest and neck veins and venules developed after two months. SVC syndrome was previously observed as an oncologic emergency that required immediate radiation treatment, even before tissue diagnosis. Nowadays, it is considered that urgent radiotherapy is not indicated. Radiotherapy can compromise the histological diagnosis and the recommended treatment is conservative – head elevation and use of oxygen. Diuretics and corticosteroids may lead to short-term improvements. Anticoagulant therapy and thrombolytic are indicated but caution is needed due to the potential for hemorrhage from cerebral metastases, while a possible alternative is the intraluminal stenting (12, 18). In this patient, there is also the presence of destruction of the proximal part of the first rib caused by invasive tumor growth. The leading cause of thoracic pain in patients is the invasion of the pleura and the chest wall (5). All malignant tumors of the lung are characterized by high metastatic potential, in SCLC, metastases are found in 95% of the cases. The displayed patient has multiple metastases in the liver, but its signs and complications have not been expressed. The patient also has vertebral metastases present that were not seen on axial skeleton radiography (lesions smaller than 1 cm in diameter and with loss of bone density smaller than 50% are hardly noticeable on radiographs) (19) but they are shown on CT in all vertebral bodies. Early detection of spinal metastases is essential for the prevention of neurologic dysfunction, which may in few



Figure 1. Chest radiograph with the right lung upper and middle lobe atelectasis

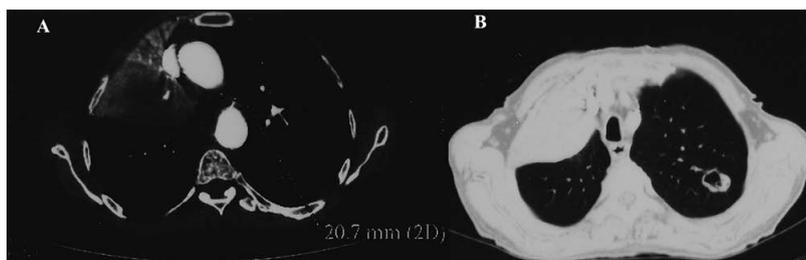


Figure 2. Chest CT scan with tumorous masses. A) In the right lung; B) In the left lung

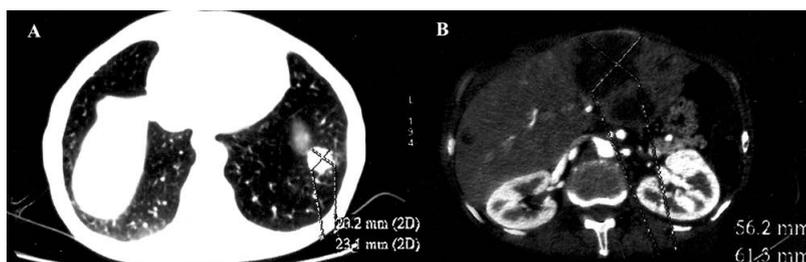


Figure 3. CT scan of the chest and abdomen. A) Tumor changes in the left lung; B) Metastases in liver

hours progress to quadriplegia or paraplegia (3). Paraneoplastic syndrome and hypertrophic osteoarthropathy were absent at the time of diagnosis. SCLC beyond hemithorax spread and the regional lymph nodes involvement is a sign of an advanced disease that is present at diagnosis in 60-70% of patients. The presence of distant metastases indicates the stage IV disease. In untreated patients with the advanced disease, overall survival rate is 6 weeks while in localized disease it is 12 weeks. SCLC has a good sensitivity to chemotherapy, localized disease has 60-80% response rate, while in advanced disease response rate is lower (about 50%) and it is partial. The use of combination of etoposid / cisplatin or karboplatinin increases the overall survival rate in localized forms to 18-20 months (five-year 20%) and in advanced disease to 9-12 months (two-year 4.6%). Relapse, weight loss and frequent hospitalization are a sign of poor prognosis (2, 5).

CONCLUSION

Although skin metastases of lung cancer are not so common, physicians should be informed about the possibility of their occurrence. When presented with new skin changes a diagnosis of metastatic disease should be considered in patients with risk factors or a known cancer. Cutaneous metastases are usually a sign of an advanced disease and usually a poorer prognosis (20, 21) but they may serve as a chemotherapy response marker.

Conflict of interest

We declare no conflicts of interest.

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