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β -HCG secretion by a non-small cell lung cancer: a case report

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SUMMARY

β -HCG secretion by a non-small cell lung cancer: a case report

Paraneoplastic secretion of beta human chorionic gonadotropin (β -HCG) in non-small cell lung cancer (NSCLC) has been rarely reported. A 43-year old male patient was admitted with dyspnea and chest pain. Thorax computed tomography (CT) revealed bilateral multiple masses and pleural effusion at right hemithorax. Positron emission tomography (PET)-CT showed pathologic 18 FDG uptake at mass lesions and mediastinal lymph nodes. The serum β -HCG level was elevated. A bronchoscopy was performed and endobronchial lesion was observed. Since a definitive diagnosis was not achieved by pathologic examination of biopsy specimen, bronchoscopy was repeated and a sample was taken by cryobiopsy. The pathologic examination revealed non-small cell lung cancer. In conclusion, the case was presented because of extremely rare occurrence of NSCLC secreting β -HCG.

Key words: β -HCG, non-small cell lung cancer, gynecomastia

ÖZET

β -HCG sektere eden küçük hücre dışı akciğer kanseri

Küçük hücre dışı karsinomlarında paraneoplastik β -HCG salınımı nadiren bildirilmiştir. 43 yaşında erkek hasta nefes darlığı ve göğüs ağrısı şikayeti ile başvurdu. Toraks bilgisayarlı tomografisinde bilateral multipl kitleler ve sağda plevral efüzyon saptandı. Pozitron emisyon tomografisinde kitle lezyonlarda ve mediastinal lenf nodlarında artmış FDG18 tutulumu görüldü. Serum β -HCG değeri yüksek olarak bulundu. Yapılan bronkoskopiye endobronşiyal lezyon saptandı. Lezyondan alınan biyopsi örneğinin patolojik inceleme- sinde tanı ayrımı yapılamaması üzerine hastaya ikinci kez bronkoskopi yapıldı ve kriyobiopsi alındı. Alınan örneğin patolojik incele- mesi küçük hücreli dışı akciğer kanseri ile uyumlu geldi. Sonuç olarak olgu β -HCG sekrete eden küçük hücre dışı akciğer kanserleri- nin nadir olması nedeni ile sunuldu.

Anahtar kelimeler: β -HCG, küçük hücre dışı akciğer kanseri, jinekoma.

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INTRODUCTION

Paraneoplastic syndromes occur in approximately 10% of patients with lung cancer and may be the initial presenting complaint, however, they also may develop late in the course of disease. The awareness of paraneoplastic syndromes associated with lung cancer may lead to earlier diagnosis of malignancy.

Human chorionic gonadotropin (HCG) is a hormone secreted by placental syncytiotrophoblasts and measurable serum β -human chorionic gonadotropin (β -HCG) is usually consistent with a pregnancy or pregnancy-related conditions such as gestational trophoblastic tumors. However, β -HCG can also be detected in conditions not associated with pregnancy. Paraneoplastic syndromes involving β -HCG production have been reported arising from tumors of multiple tissues, including bone, breast and stomach (1). Lung cancer also can secrete β -HCG as an ectopic hormone.

We report here a rare case of non-small cell lung cancer (NSCLC) secreting β -HCG in a male patient.

CASE REPORT

A 43-year old male patient was admitted with dyspnea and chest pain. On physical examination the breath sounds were markedly diminished at right hemithorax and he had bilateral gynaecomastia. He was a smoker and his smoking history was 22 pack years. A chest radiograph showed opacity involving all zones of right hemithorax and nodular opacities at left hemithorax (Figure 1). A thorax computed tomog-



Figure 1. A chest radiograph showing opacity involving all zones of right hemithorax and nodular opacities at left hemithorax.

raphy (CT) revealed a mass lesion occupying almost all right hemithorax and multiple masses in the left hemithorax. There was also pleural effusion and compression atelectasis at right hemithorax. Laboratory studies revealed a normal complete blood count and serum biochemistry. The erythrocyte sedimentation rate was elevated. Since he was a young patient, had bilateral multiple masses at thorax CT and also had gynaecomastia, a germ cell tumor was suspected and serum β -HCG level was analyzed. The serum β -HCG level was found as elevated: 4261 mIU/mL (normal less than 2.0). Positron emission tomography (PET)-CT revealed pathologic 18 FDG uptake at mass lesions in both hemithorax and mediastinal lymph nodes (Figure 2). Positron emission tomography and ultrasonography showed no gonadal involvement. A bronchoscopy was performed and an endobronchial lesion at the apical segment of right upper lobe was observed. A definitive diagnosis was not achieved by pathologic examination of biopsy specimen, bronchoscopy was repeated and samples were taken by cryobiopsy. Tumor consisted of solid sheets of uniform large tumor cells (Figure 3). Tumor cells were positive with P63 and β -HCG (Figure 4). Keratin 5/6, TTF-1, PLAP and AFP were negative in tumor cells. Mucine carmin staining was negative. We didn't observe syncytiotrophoblast and cytotrophoblast. Our case was β -HCG secreting nonsmall cell lung carcinoma. Since the patient was inoperable, a chemotherapy protocol was started.

DISCUSSION

Human chorionic gonadotropin is a dimer of α and β subunits. While the α subunit is present in many hormones, the β subunit is unique to trophoblast cells and hence may be used as a marker of pregnancy. However, serum β -HCG may also be elevated in conditions not associated with pregnancy. A high level of β -HCG may be seen in choriocarcinomas and germ cell tumors. One of the causes of elevation in serum β -HCG level is paraneoplastic syndromes, seen in various malignancies. Paraneoplastic β -HCG secretion has been reported in squamous cell carcinoma of the head, breast cancer, renal cell carcinoma, gastrointestinal malignancies, gynecologic and urologic cancers, lymphoma and sarcomas (2-6). β -HCG secretion is rarely associated with lung cancer and limited cases have been reported previously (7-9).

Vicier et al. reported a β -HCG-secreting lung adenocarcinoma in a 43-year-old woman (7). They reported

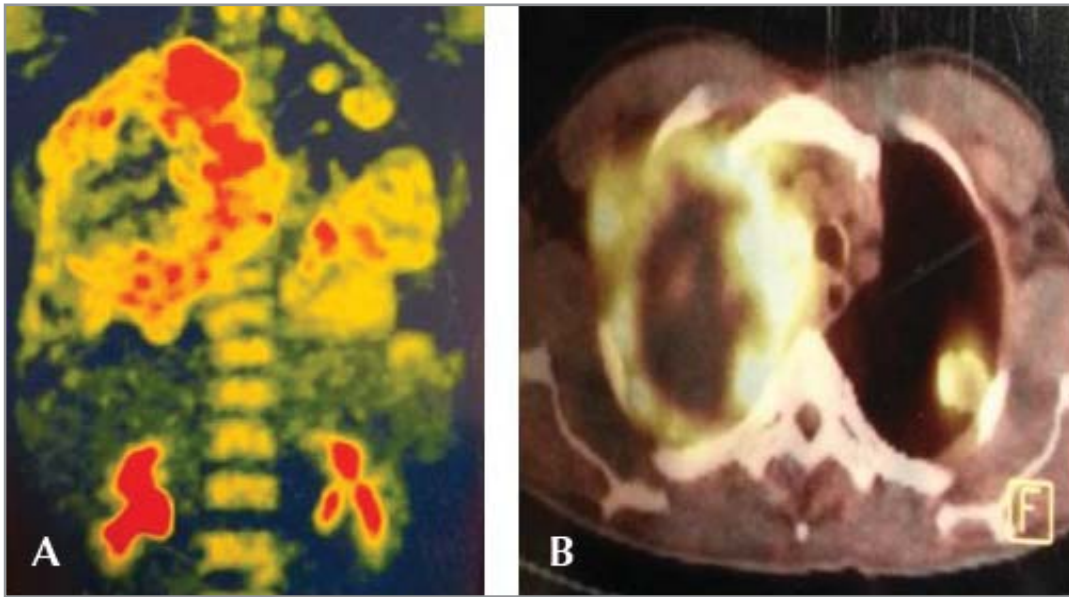


Figure 2. (A,B) Pathologic 18 FDG uptake at mass lesions in both hemithorax and mediastinal lymph nodes at PET-CT.

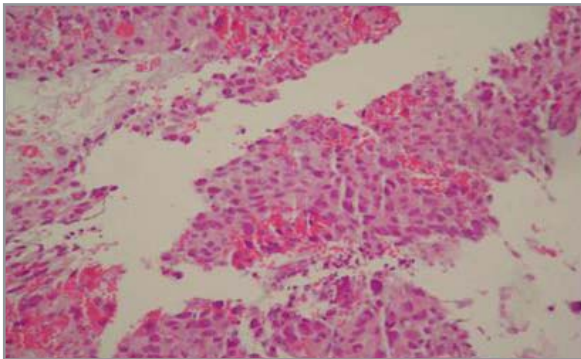


Figure 3. The tumor cells with large hyperchromatic nuclei, abundant eosinophilic cytoplasm.

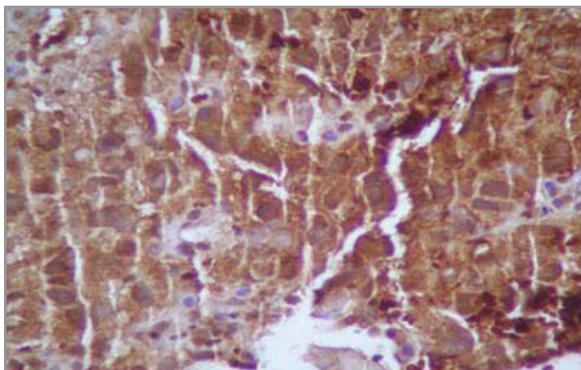


Figure 4. Beta-HCG immunoreactivity in tumor cells (Beta HCG x400).

that, after first-line chemotherapy, a progression in tumor with an increase in β -HCG level was observed. However, after modification of chemotherapy, a partial tumor response with a markedly decrease in β -HCG level was obtained. In another report, Yoshida et al. described a case of pulmonary squamous cell carcinoma secreting β -HCG in a young female patient, in whom, after two months of surgery, the β -HCG dropped to normal levels (8).

The number of case reports on β -HCG secreting lung cancer, especially in men, is extremely rare and to our knowledge, there are only two reports in the literature (9,10). Niimi et al. reported a case of hCG-producing large cell carcinoma of the lung in a 73-year-old man patient (9). They also reported that, serum hCG levels fluctuated in parallel with the response of the cancer to surgery, chemotherapy and radiotherapy. Goyal et al. reported a case of squamous cell lung cancer with high serum β -HCG level, galactorrhoea and gynaecomastia, and the authors concluded that, lung cancer should be considered in a male patient presenting with gynaecomastia and/or galactorrhoea (10).

In most of the reported female patients with β -HCG-secreting lung cancers, β -HCG was examined because of a suspicion of pregnancy. In contrast, in the male patient reported by Niimi et al., serum β -HCG level was measured because of gynaecomastia. Our case was a young patient and had bilateral

multiple mass lesions, gynaecomastia, thus, the serum β-HCG level was examined for a suspicion of germ cell tumor.

In conclusion, we report a rare case of β-HCG secreting non-small cell lung cancer in a male patient. Elevated serum β-HCG levels may be observed in lung cancer, and symptoms caused by high serum β-HCG levels may lead to an early diagnosis of malignancy.

CONFLICT of INTEREST

None declared.

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