
Small large-cell neuroendocrine carcinoma in a patient with pulmonary emphysema

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ÖZET

Amfizemli bir hastada küçük bir büyük hücreli nöroendokrin kanser

Büyük hücreli nöroendokrin kanserler göreceli olarak nadirdir ve sıklıkla daha büyük tümörler olarak ortaya çıkar. Bu yazıda, amfizemli olan 63 yaşında bir erkek hastada küçük bir büyük hücreli nöroendokrin kanser olgusu bildiriyoruz. Periferik parankimal nodülde lobülasyon ve spiküle uzanımlar yoktu, küçük boyutu ve çevreleyen amfizemin etkisiyle cerrahi öncesinde doğru tanıyı koymak güçtü.

Anahtar Kelimeler: *Büyük hücreli nöroendokrin kanser, amfizem, bilgisayarlı tomografi, tanı, akciğer kanseri.*

SUMMARY

Small large-cell neuroendocrine carcinoma in a patient with pulmonary emphysema

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Large-cell neuroendocrine carcinomas (LCNECs) are relatively rare, and most reported occurrences tend to involve relatively large tumors. We report a small LCNEC in a 63-year-old male patient with pulmonary emphysema. The peripheral pul-

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monary nodule did not have lobulation and spiculation, and it was difficult to establish correct diagnosis before surgery because of its small size and effect of surrounding emphysematous change.

Key Words: Large-cell neuroendocrine carcinoma, pulmonary emphysema, CT scan, diagnosis, lung cancer.

Co-existing pulmonary emphysema can influence the radiographic appearance of various lung diseases. The extent of emphysema around a peripheral lung nodule might affect its computerized tomography features. We report herein a case with small large-cell neuroendocrine carcinoma (LCNEC) in a patient with pulmonary emphysema.

CASE REPORT

A 63-years-old male patient was admitted to our hospital because of a small nodular lesion that was detected incidentally by a chest radiograph. He had smoked 30 cigarettes per day for 40 years. Routine blood examination and serum tumor marker including neurons-specific enolase and pro-gastrin releasing peptide were all within normal range. The patient was totally asymptomatic with unremarkable physical examination. Chest CT scan revealed a 10 mm nodule in right middle lobe of the lung (Figure 1). CT also showed emphysematous change in both lungs, but no hilar and mediastinal lymph node swelling was observed. Spirometry showed forced expiratory volume in 1 second of 1.51 L (58.3% predicted) and forced vital capacity of 3.78 L (110.5% predicted). Flow volume loop was consistent with chronic obstructive pulmonary disease. Non-small cell lung cancer was suspected through transbronchial biopsy, but a definitive diagnosis could not be made before the surgery. Although his minimal impairment of his lung function, surgical treatment was selected because there were no distant metastases in the preoperative findings. Right middle lobectomy with nodal dissection was performed based on the intraoperative histologic diagnosis. At microscopic analysis, the tumor was characterized by large, polygonal-shaped cells with relatively abundant cytoplasm (Figure 2). Rosette-like and palisading-like structures were present focally.

Centrally located focal necrosis in the tumor was observed. Mitotic counts were 20 per 10 high-power fields. Immunohistochemistry showed positive staining for chromogranin A,



Figure 1. Chest CT scan revealed a small nodule measuring 10 mm in the right middle lobe.

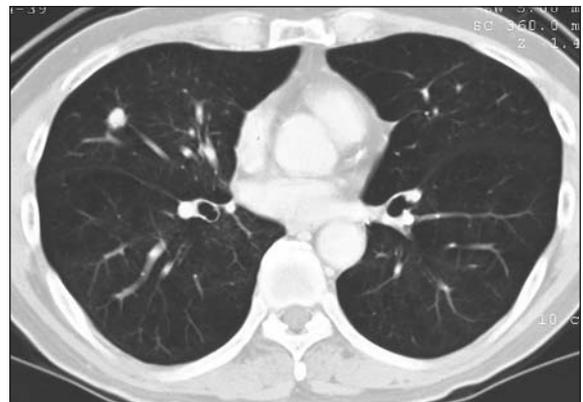


Figure 2. The histological examination showed large cell carcinoma (hematoxyllin-eosin staining, x20).

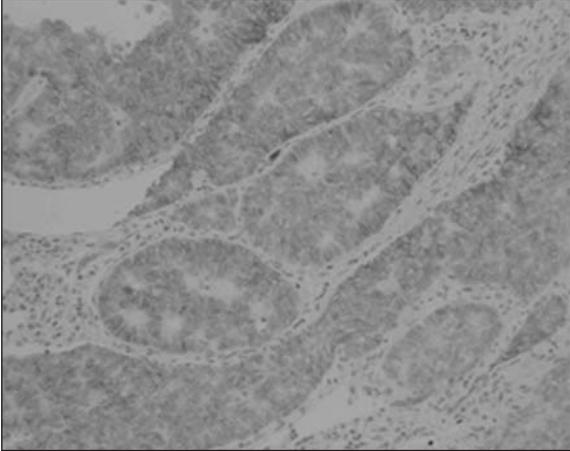


Figure 3. Immunostaining of the tumor cells with CD56. The tumor cells showed a characteristic membrane-positive appearance for CD56 (x200).

synaptophysin, and CD56 (Figure 3). The final pathological diagnosis was LCNEC, measuring 13 x 12 x 8 mm, and the tumor stage proved to be pT1N0M0.

The postoperative course was uncomplicated, and the patient was discharged and was asymptomatic at the 29-month follow-up.

DISCUSSION

LCNEC is a category of neuroendocrine lung tumors proposed by Travis et al, that has been newly listed in the latest WHO classification of lung tumors (1,2). It has been reported that postoperative stage corresponded to stage IA LCNEC ranged 4.8-23.0% (3-5). Some previous authors discussed the size of LCNEC (5-8). Rossi et al, described that the median diameter of their 83 LCNECs was 40 mm (mean, 41 mm; range, 10 to 90 mm) (5). Shin et al, reported that the mean diameter of the lesion was 34 mm (range 20-50 mm) (6). In 11 LCNEC patients reported by Jung et al, the size of the tumor ranged 13 to 86 mm (mean 50 mm) in the greatest diameter on CT (7). Most reported occurrences therefore tend to involve relatively large tumors, often with a poor outcome associated with the aggressive biologic behaviors (8). Very recently, Hanaoka et al reported an incidentally detected subcentimeter LCNEC, measuring 8 x 10 mm (9). Our case presented here was one of the smallest LCNECs in the medical literature.

Radiologic features of LCNEC were peripherally located pulmonary nodule or mass with or without lymphadenopathy (6). Oshiro described that LCNEC usually appeared as a well-defined and lobulated tumor with no airbronchograms or calcification (10). Shin et al, reported that all masses were round or ovoid with lobulated margin (6). In 8 of 11 LCNEC patients reported by Jung et al, tumor necrosis was seen on CT (6). In a very recent review by Chong et al, the CT findings are non-specific and are similar to those of their non-small cell lung cancers (11). Whereas, malignant nodules in patients with pulmonary emphysema had lower frequencies of lobulation and spiculation than those previously reported for malignant nodules in the general population (12). When the surrounding parenchyma is emphysematous, the extension of tumor cells along its interstitium may sometimes produce a concave or rough speculated margin. Additionally, diagnosis of LCNEC requires histologic analysis, cytological evaluation, and immunohistochemistry. Therefore, diagnosis of LCNEC through transbronchial biopsy may be difficult. In the case described here, the small pulmonary mass in the right middle lobe did not have the characteristic CT findings of primary lung cancer such as lobulation and spiculation, and it was difficult to establish correct diagnosis before surgery because of its small size and effect of surrounding emphysematous change.

Chest roentgenograph, or even CT scan, can not enable the comprehension of the existence of small LCNEC only by comparison of current and previous radiographic pictures, before the tumor has reached a considerable size. Therefore, the possibility of LCNEC should be kept in mind when making a differential diagnosis of lung cancers in cases where even a subcentimeter pulmonary nodule detected on CT scan. Especially in some patients with COPD, the extent of emphysematous change around a peripheral small pulmonary nodule may affect its CT appearance as observed in our patient.

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