Basaloid carcinoma of the lung

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Basaloid carcinomas (BC) have been described in various locations including skin, anal canal, tongue, larynx, and recently the lungs. These tumors carry a poor prognosis justifying their classification as a distinct form of lung cancer. We present a case of basaloid lung carcinoma in a 72-year-old man. On gross examination of the left upper lobectomy material a well delineated, solid, yellow-gray mass five cm in diameter was seen close to the pleural surface. Microscopically the tumor was composed of small cells in a lobular growth pattern with scant cytoplasm and moderately hyperchromatic nuclei without prominent nucleoli. The cells showed a high mitotic rate and peripheral palisading. The visceral pleura was infiltrated by the tumor and there were metastatic deposits in the hilar lymph nodes. The immunohistological examination for neuroendocrine markers was negative. Morphological and immunohistochemical characteristics of BCs are discussed in this case report. [Turk J Cancer 2000;30(1):36-39]

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A 72-year-old man with a long history of smoking was admitted to İbn-i Sina Hospital in April 1998 with recent onset of productive cough and anterior chest pain. Physical examination showed decreased respiratory sounds in the upper left lung field. Laboratory examination results were unremarkable. A pulmonary function test revealed obstructive and restrictive impairment. Chest X-ray and CT scan showed a well circumscribed tumor in the left upper lobe. Bronchoscopic examination was normal.

The patient underwent an exploratory left thoracotomy, where a mass lesion measuring six cm in greatest diameter was observed to involve most of the left upper lobe. The left lower lobe also showed obstructive atelectasis. Macroscopically the tumor was an unencapsulated mass measuring 6x5x4 cm in size. The cut surface showed yellowish-white solid areas with necrosis in the central portion. Macroscopically the lesion was not related with the bronchi.

On microscopic examination the tumor had a solid lobular or anastomotic trabecular pattern growing in a fingerlike fashion, and was composed of small
cuboidal to fusiform cells with moderately hyperchromatic nuclei and without prominent nucleoli (Figure 1). There was a scant but visible cytoplasm and no nuclear molding. There was neither glandular differentiation nor mucin formation and no evidence of squamous differentiation was observed. The cells showed a high mitotic rate and were arranged radially at the periphery of lobules in a palisading fashion.

Fig 1. High magnification displaying small cuboidal cells with moderately hyperchromatic nuclei, inconspicuous nucleoli and little cytoplasm showing peripheral palisading (H&Ex40)

Immunohistochemistry was performed using indirect immunoperoxidase technique with an avidine-biotin amplification system. Appropriate negative and positive controls were performed. Immunohistochemical staining showed intense and diffuse immunoreactivity for low molecular weight cytokeratin (Immuron, 491170). Low levels of cytoplasmic high molecular weight cytokeratin (Immuron, 491175) and carcinoembryonic antigen (Novacastro, MO 200302) were expressed only focally within the tumor cells. Neuroendocrine markers such as neuron specific enolase (Zymed, 18-0196), neurofilament (Immuron, 491181), chromogranin A (Zymed, MO869), and synaptophysin (Biogenex, MO1270995) were all negative.
Distinct and specific histopathologic characteristics of basaloid carcinoma were first described by Wain et al. (1) in tongue, hypopharynx, and larynx, and by McKay et al. (2) in the upper aerodigestive tract. Later Moro et al. (3) described the same histopathologic features in lung. These tumors, in their pure form, are histologically similar to basal cell carcinoma of the skin and the basaloid form of the cloacogenic anal carcinoma. In the proposed classification scheme of World Health Organization/1998, BC was included as a subgroup in both squamous cell and large cell carcinoma groups (4).

In a review of 115 poorly differentiated lung cancers, Brambilla et al. (5) found 38 cases of basaloid carcinoma. BC was present in pure form in 19 cases. The remaining 19 tumors were of a mixed histology consisting of a basaloid component and a second component of either squamous cell carcinoma, large cell carcinoma or adenocarcinoma. Our case was an example of the pure form of BC; we did not observe any evidence of glandular or squamous differentiation or mucin formation on several sections made from the tumor. The most difficult entity to be differentiated from the pure form of basaloid carcinoma is neuroendocrine (NE) lung tumors. The hallmarks of NE tumors are the presence of neurosecretory granules on electron microscopy and expression of an immunohistochemical NE phenotype. On the contrary, in basaloid carcinomas the NE phenotype is always incomplete and neuroendocrine markers are expressed in a very dissociate manner (2,3,6). In our case, we did not observe positivity with neuroendocrine markers, and as the tumor solely showed basaloid features, we did not have any difficulty to reach the correct diagnosis.

BC shares the small nuclear size and the densely packed chromatin with the intermediate type of small cell lung carcinoma (3,5). However, in BC, cells do not show nuclear molding because of the presence of an appreciable cytoplasm. Other features that aid in differentiating these tumors from small cell lung carcinomas are their clinical presentation and frequent resectability.

When BCs are associated with glandular differentiation with intracellular mucus and small cystic spaces, they bear close resemblance to adenoid cystic basal cell carcinoma described in the esophagus, uterine cervix, and salivary glands, where they are considered to be a solid form of adenoid cystic carcinoma. When BCs are associated with a large cell component, the large cell histology is similar to the transitional type of cloacogenic carcinoma.

BC of lung carries a poor prognosis, as demonstrated by a less than 15% probability of 5 year survival, and a 20 month median survival time in stage I and II disease compared with a 47% probability of 5 year survival and 40 month median survival time for other poorly differentiated carcinoma groups (3). The more aggressive pattern of basaloid carcinoma occurs in such other locations as upper aerodigestive tract, as has been shown in the study of Brambilla et al. (5).

In conclusion, the pure form of basaloid carcinoma is a very rare tumor with a prognosis poorer than other undifferentiated lung tumors, thus deserving recognition as a specific histopathological entity.
References