

Cerebral metastasis of mucoepidermoid carcinoma as the first clinical presentation: Detailed immunohistochemical evaluation

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ABSTRACT

Mucoepidermoid carcinoma (MEC) is known as a low grade malignant tumor. Lymph node and distant metastases are only seen in the high grade variant of MEC. The patient, 52-year-old male, had progressive vision loss, urinary incontinence and weakness at the left side at first physical examination. Computed tomography scan demonstrated 4x3x4 cm mass at parafalcian region in the brain and an additional 2x2 cm mass at right lung field. The resected mass in the brain was 4.5 cm in diameter, solid, necrotic, pale gray tissue with irregular borders. Microscopically the tumor was composed of squamoid, intermediate and glandular cells. Mucicarmine, PAS-Alcian blue, carcinoembryonic antigen-monoclonal (CEA-M), cytokeratin 7 and 18 staining revealed glandular cells to whereas cytokeratin 8 was focally expressed in squamoid cells. Cytokeratin 20 and c-erb-B2 were negative in all of the tumor cells. This case is a low grade MEC metastasis which emphasizes the malignant potential of these tumors. [Turk J Cancer 2008;38(2):83-86]

KEY WORDS:

Mucoepidermoid carcinoma, immunohistochemistry, metastasis

INTRODUCTION

About 6% of the major and 19% of the minor salivary gland tumors are mucoepidermoid carcinoma (MEC) and may also be found at various locations such as lung, esophagus, lachrymal gland, pancreas, thyroid and thymus. MEC arises in main to segmental bronchi, if it is localized in lung (1-3).

MEC has slow progress and low malignant potential. This tumor has been divided into low, intermediate and high grade type. The prognosis depends on the tumor's grade and has marked difference between three types (2,4).

Low grade tumors are known as local invasive and has a high survival rates with surgery. The distant metastases and lymph node metastasis were associated with high grade MEC (1).

CASE REPORT

52-year-old male defined a head-ache for a long time and progressive vision loss for 2 months. He has had urinary incontinence and weakness at left side recently. At his physical examination near total vision loss, bilateral papilla edema markedly at right and papilla atrophy with

pale optic disk at left side were found. He had hemiplegia at the left side.

Magnetic Resonance Imaging (MRI) and Computed Tomography (CT) scan showed 4x3x4 cm mass located at parafalcian region and marked edema at right frontal lobe with thoracic CT scan 2x2 cm mass at right upper lobe posterior segment of lung.

Intraoperative pathology assessment of the mass in the brain was reported as carcinoma metastasis (Figure 1). The excised tumor was in 4x4.5x2.5 cm dimensions and gray color with irregular borders and solid-necrotic appearance on sectioning.

The specimen was fixed in 10% formalin. Paraffin embedded blocks and sections were routinely prepared and stained with hematoxylin and eosin (H&E).

Microscopically, the tumor had both solid growth pattern and necrotic areas. The solid areas were composed of

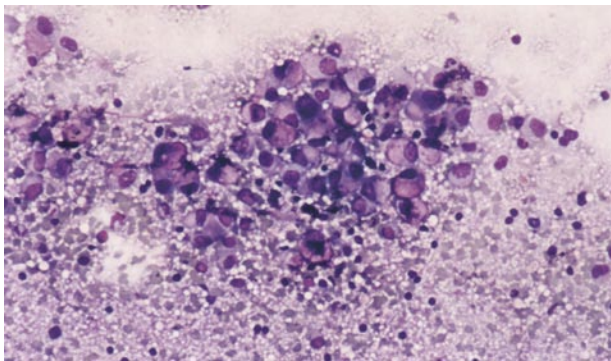


Fig 1. Abundant vacuolar cytoplasm with eccentrically placed nuclei (MGG, x400)

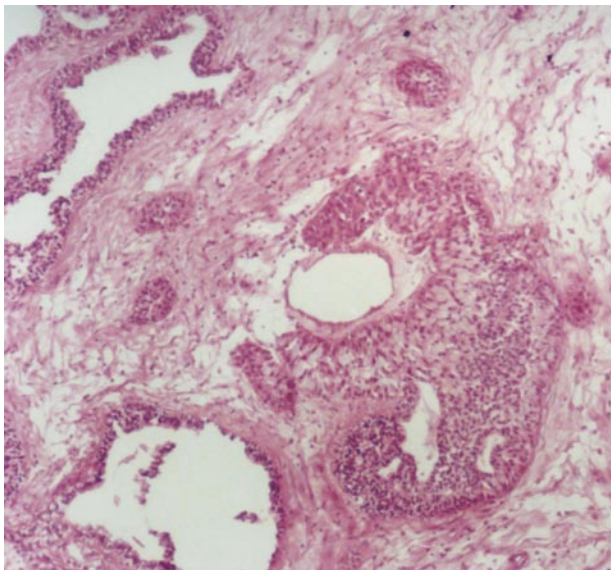


Fig 2. The solid nest and glandular formations in dense fibrous stroma (H&E, x40)

squamous, intermediate and goblet type cells. The squamous cells were defined by the presence of eosinophilic cytoplasm and distinct intercellular bridges. Intermediate type cells were also seen as similar to normal salivary gland duct cells. The tumor nests were separated by a fibrous stroma (Figure 2). Mitotic activity was sparse. Goblet type tumor cells reacted positively with mucicarmine (Figure 3), PAS-Alcian blue (pH 2.5).

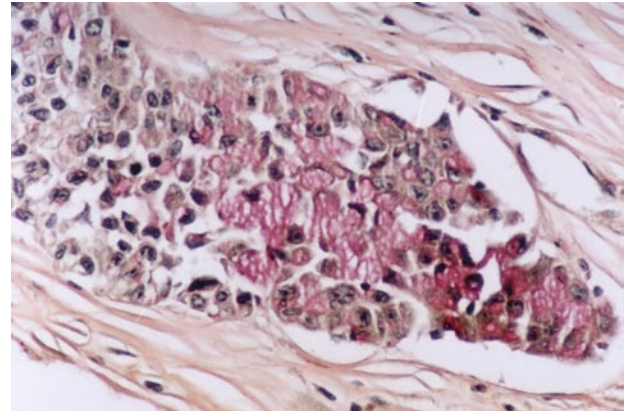


Fig 3. Mucicarmine-stained sections of MEC showing strong mucin positivity within cytoplasm of cells and intermediate cells (Mucicarmine stain, x200)

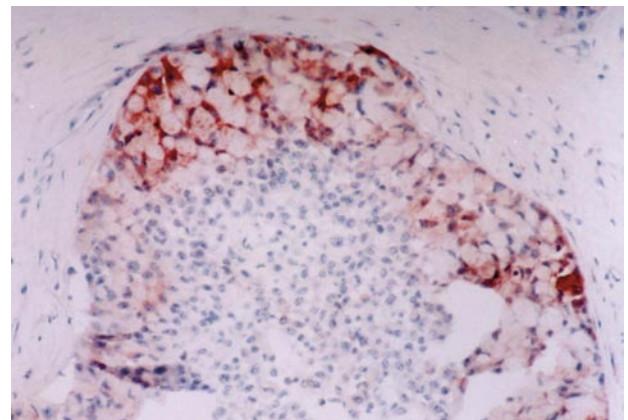


Fig 4. Immunohistochemical positivity for CEA-M in mucinous cells (CEA-M, x100)

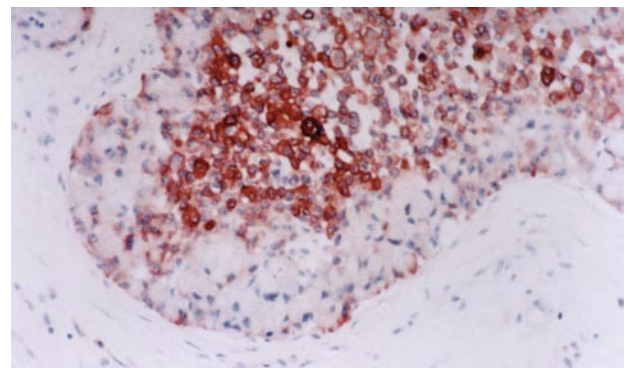


Fig 5. Positive immunoperoxidase reaction for cytokeratin 8 in cytoplasm of intermediate cells (cytokeratin 8, x100)

For immunocytochemistry, the streptavidin biotin technique was used with a panel of commercially available antisera: carcinoembryonic antigen-monoclonal (CEA, COL-1, monoclonal, Neomarkers, CA, USA), cytokeratin 7 (K72.7, monoclonal, Neomarkers, CA, USA), cytokeratin 8 (35BH11, monoclonal, Neomarkers, CA, USA), cytokeratin 18 (K18,7, monoclonal, Neomarkers, CA, USA), cytokeratin 20 (N1627, monoclonal, DAKO, CA, USA) and c-erb-B2 (N1629, Dako, CA, USA). Goblet type tumor cells reacted with antibodies directed against CEA (Figure 4), cytokeratin 7 and 18. Squamous type cells reacted only with cytokeratin 8 (Figure 5). None of the tumor cells was stained with cytokeratin 20 and c-erb-B2.

Our case was defined as MEC with its histomorphology, histochemical and immunohistochemical features. Radiological investigations with CT and MRI did not reveal any primary focus except lung. Unfortunately the patient died after two months and an autopsy permission was not available.

DISCUSSION

MEC occurs at any age and represents the most common malignant salivary gland tumors in children. Most cases of MEC are located in the parotid gland. It accounts for 0.2 percent of all lung tumors and is the second most frequent pulmonary tumor of bronchial gland origin after adenoid cystic carcinoma (4-7). Microscopically the tumor is composed of combination of mucinous, squamous and intermediate type cells. The mucinous cells are large with distinct borders and have a foamy cytoplasm. The squamous cells may show large nuclei with prominent nucleoli and they are arranged in nests or solid areas in conjunction with the mucinous cells. The intermediate cells are round to oval and basaloid with scant pink cytoplasm, show no particular differentiating characteristics (1,2,6,8). Mucinous cells are intensely positive for mucicarmine and PAS-Alcian blue (pH 2.5), and immunohistochemical CEA activity is shown in the mucinous cells. Cytokeratin 13 and 19 are negative in the mucinous cells and expressed in intermediate cells. (7,9). In our case mucicarmine stained approximately 35% of the cell. Mucicarmine positive cells are distributed centrally or peripherally within the cell nests. Immunohistochemi-

cally cytokeratin 7, 18, CEA-M were positive in the mucinous cells. Cytokeratin 8 was focally expressed in the squamous cells and cytokeratin 20 was negative in all of the tumor cells.

Cho and coworkers (9) described immunohistochemically detectable c-erb-B2. They found c-erb-B2 for overexpression in high grade MEC. In our case c-erb-B2 was negative. Some reports divided this tumor into two grades as low and high and others (2,4,6,10) divided into three grades as low, intermediate, high.

Low grade MEC appear under low power microscopy as well-circumscribed mass with cystic areas containing mucinous material (4,5). Well-differentiated mucinous cells predominate. High grade MEC is more solid and has a more infiltrative pattern of growth. The tumor cells in high grade pattern show marked nuclear pleomorphism, increased mitotic activity. Intermediate and squamous type tumor cells predominate in high grade MEC. Intermediate grade is characterized by solidly growing areas of epidermoid cells or intermediate elements with the latter cell types predominating. Low grade MEC has a low malignant potential, characterized mainly by local invasion and it had a favorable outcome.

Distant metastasis and lymph-node metastasis were reported in 15% to 35% of cases with MEC. Lymph-node and distant metastases are associated significantly with high grade MEC. However a lethal clinic outcome, including distant metastases, can be observed with some low grade MEC (2,4). Five-year survival rate is 98% for the low grade MEC and 56% for the high grade MEC (4). In our case we found necrotic areas with sheets of squamous cells with infrequent mitoses, numerous well-formed mucinous cells. According to these findings our diagnosis was intermediate grade MEC. The patient died 2 months after his operation.

We would like to emphasize that non-high grade MEC may make unexpected distant metastases.

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