Salivary-Gland Type Tumors of the Lung

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Salivary-Gland type Tumors

• This family of tumors is rare as primary neoplasms of the lung. Because of the similar histological features as those occurring in the salivary glands, it is important to obtain a careful clinical history in order to rule out a primary tumor in that location.
Mucoepidermoid Carcinoma

Clinical features:
- Occurs at any age
- Some studies suggest higher incidence in men
- Usually symptoms of obstruction due to the central location of the tumor
- No predilection for any particular lobe or lung segment

Gross Features
Histological Features

- Low and High grade tumor
- Solid epidermoid cellular proliferation admixed with mucous producing cells.
  - Clear cell - intermediate cells
  - No keratinization
Mucoepidermoid Carcinoma

- The immunohistochemical profile of this tumor is similar to other epithelial tumor in the lung, mainly squamous cell carcinoma. Therefore, the diagnosis is more often on morphological basis.

Histochemistry
- Mucicarmine + in the mucous producing cells
- PAS +
- DPAS +

Immunohistochemistry
- Keratin CAM 5.2
- Keratin 5/6
- P40
- p63
MEC/MAML2
1. Positive more often in low grade tumors.
2. May be more often positive in the tumors of the salivary gland than those in the lung or mediastinum.
3. It may vary from 30 to 90% of cases tested.
4. It is not necessary to make the diagnosis of MEC.
5. It is not a test needed for treatment options.

Mucoepidermoid Carcinoma

- Differential Diagnosis
  - Adenosquamous carcinoma
  - Squamous cell carcinoma (in a small biopsy)

Adenosquamous Carcinoma
Mucoepidermoid Carcinoma

• Conclusions:
  – The prognosis of these tumors depends on the histological subtype
  – Low grade tumors appear to be controlled by surgery alone
  – High grade tumor have a more aggressive behavior. Radiation therapy has been used

Adenoid Cystic Carcinoma

Clinical features
  – Mainly in adult individuals
  – No gender predilection
  – In our study, we found a slight predilection for men.
  – Since it is often a central lesion, patients present with cough, hemoptysis, and shortness of breath.
Gross Features

Histological Features

• Essentially there are three different growth patterns:
  – Cylindromatous
  – Tubular
  – Solid
Adenoid Cystic Carcinoma

- **Immunohistochemical Features:**
  - Myoepithelial proliferation
  - Keratin, actin, vimentin, and S-100 protein can show positive staining.
  - More recently Myb, CD117, DOG1 have been reported as important stain in this tumor.

Adenoid Cystic Carcinoma

- **Treatment and Prognosis**
  - Surgical resection in the majority of patients.
  - Slow-growth tumor
  - Recurrences are common
  - Staging at the time of diagnosis is highly important.
  - Survival at 10 years is less than 50%.
Adenoid Cystic Carcinoma

- Differential Diagnosis:
  - Mixed tumor (in small biopsies)
  - Carcinoma with amyloid-like stroma
  - Adenocarcinoma

Pleomorphic Adenoma

- Clinical Features:
  - Adult individuals with slight predilection for women
  - Ages 35-74
  - Central or peripheral tumor
  - Symptoms depend on location
Pleomorphic Adenoma

• Malignant (ex-pleomorphic adenoma)
  – Similar features as the benign but with clearly malignant areas
  – Necrosis, vascular invasion

• Benign
  – Chondromyxoid areas
  – Glandular component
  – Solid Myoepithelial proliferation
  – Plasmacytoid appearance
Pleomorphic Adenoma

- Immunohistochemical Features:
  - CAM 5.2 +
  - Broad spectrum keratin +
  - Smooth muscle actin (HHF-35) +
  - S-100 protein +/-
  - GFAP +/-

Pleomorphic Adenoma

- Differential Diagnosis:
  - Mucoepidermoid Carcinoma
  - Epithelial Myoepithelial Carcinoma
  - Carcinoma
  - Blastoma
  - Carcinosarcoma
Pleomorphic Adenoma

• Outcome:
  – It is an uncommon tumor and its behavior is similar to that observed when these tumors occur in the salivary gland. The majority of these tumors will behave in an indolent fashion.
  – Those with cellular atypia, mitosis, and infiltrative pattern will follow a more aggressive behavior.

Acinic Cell Carcinoma

• Clinical Features:
  – The tumor occur at any age
  – No gender predilection
  – Central or peripheral tumors
  – Symptoms will depend on the location
Acinic Cell Carcinoma

- Histology
  - Oncocytic
  - Cystic (papillocystic)
  - Acinar
    - Clear granular cytoplasm
    - Cellular atypia is rare
    - Mitosis are infrequent
Electron Microscopy

Acinic Cell Carcinoma

- Immunohistochemistry:
  - The conventional epithelial markers will likely show positive staining.
  - Amylase, Chymotrypsin may be positive.
  - SOX10 and DOG1 may also be positive.

Acinic Cell Carcinoma

- Differential Diagnosis
  - Oncocytic Carcinoid
  - Clear cell (Sugar) tumor
  - Granular cell tumor
Acinic Cell Carcinoma

- Conclusions
  - It is a rare tumor that behaves like a low grade malignant tumor. Surgical resection appears to be the treatment of choice.

Epithelial-Myoepithelial Carcinoma

- Only a few cases are reported in the literature. Therefore, it is difficult to define its biologic behavior while primary in the lung. It is possible that complete surgical resection be the treatment of choice.
E-M Carcinoma

Epithelial-Myoepithelial Ca

• Histology
  – Glandular and tubular proliferation
  – Distinctive clear cell morphology
  – Myoepithelial immunophenotype
IHC
A) lung bx; B) glandular pattern; C-E) SMA +; F) S-100 +; G) GFAP focally +; H) CD117 scattered cells +
E-M Carcinoma

- Prognosis and Treatment
  - Unusual cases may involve lymph nodes
  - Although difficult to determine for these tumors in the lung, their behavior may that of a low grade tumor.
  - Surgical resection is the treatment of choice.

Hyalinizing Clear Cell Carcinoma

- Unusual tumor as primary lung neoplasm.
- Only a few cases have been reported in the literature.
- It is possible that the clinical behavior is similar to those tumors in the salivary glands.
- Surgical Resection is the treatment of choice.
Hyalinizing Clear Cell

- **IHC**
  - Keratin 5/6
  - P40
  - Keratin CAM 5.2
  - P63

- **Molecular**
  - MALM2 negative

**Differential Diagnosis:**
- Mucoepidermoid carcinoma
- Squamous cell carcinoma
Oncocytoma

- There are only a few cases reported in the literature. However, before rendering the diagnosis of pulmonary oncocytoma, it is important to rule out other more common primary lung tumors such as Oncocytic Carcinoid tumor. Immunohistochemical and/or E.M. can be helpful.

Conclusions

- Salivary gland type tumors in the lung represent a small percentage of primary lung tumors. It is highly important to separate them from other more conventional carcinomas of the lung.
- Also important is to obtain a careful clinical history in order to properly rule out the possibility of metastatic disease.