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AT CHICAGO *COLLEGE OF MEDICINE*

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**Illinois Registry of Anatomic Pathology**

Case Histories and Diagnoses  
April 1, 2013



## **Case 1: Salivary Gland Type Adenomyoepithelioma of Lung**

*Presenter: Mansooreh Eghtesadghalati MD; Attending: Michael Pins MD*

**Clinical History:** The patient is a 49-year-old female with past medical history of hypertension and hyperlipidemia who was found to have a peripheral left lower lobe lung nodule while being worked up for coronary artery disease. The patient subsequently underwent wedge resection of the left lower lobe.

### **Diagnosis: Salivary Gland Type Adenomyoepithelioma of Lung**

#### **Differential Diagnosis:**

- Well differentiated pulmonary adenocarcinoma
- Pleomorphic adenoma
- Adenoid cystic carcinoma
- Mucous gland adenoma
- Pulmonary adenomyoepithelioma
- Acinic cell carcinoma
- Metastatic tumor

#### **Key Microscopic Features:**

- Well-circumscribed unencapsulated polypoid epithelial lesion with tubulocystic, glandular and papillary formation
- Inner layer (luminal) of epithelial cells (tall columnar to flattened cuboidal cells)
- Outer layer (abluminal) of myoepithelial cells with clear cytoplasm
- Low mitotic activity
- Glandular structures may blend into areas composed of sheets of clear cells, plasmacytoid cells or spindle cells
- Predominant glandular proliferation is transected by thin fibroconnective stromal septae

#### **Immunohistochemical stains:**

- Positive: CK7, BRST2/GCDFP-15, PAS without diastase (luminal cells); p63, Calponin (abluminal cells)
- Negative: TTF1, PAS with diastase

#### **Discussion:**

- Adenomyoepithelioma has been described under a variety of names, including epithelial-myoeplithelial tumor, epithelial-myoeplithelial carcinoma and epithelial-myoeplithelial tumor of unproven malignant potential
- It is a rare salivary gland neoplasm (1% of all salivary gland tumors) that is also seen in breast, skin and lung
- Epithelial-myoeplithelial tumors of the salivary gland behave as low-grade malignant neoplasms, with a long interval between the original diagnosis and recurrence (~ 5 years) or distant metastases (~ 15 years), accordingly some authors consider this the most likely clinical behavior of the corresponding tumors of the lung
- Adenomyoepitheliomas found in breast are more common than those found in other organs with a more aggressive course

- Pulmonary tumors are usually of small size for the early symptomatology due to their endobronchial location; exceedingly rare cases have been reported in the periphery of lung
- Clear surgical margins is important to avoid recurrence
- Malignant behavior has been reported in a few cases

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## **Case 2: Synovial Sarcoma (Monophasic Spindle)**

*Presenter: Jane James MD PhD; Attending: Elizabeth Wiley MD*

**Clinical History:** The patient is a 34-year-old female teacher with history of recurrent papillary thyroid carcinoma who presented to an endocrinologist for her annual evaluation. She was treated with surgical resection and a course of radioactive iodine six years ago; two subsequent recurrences were each addressed with further surgical resection and radioactive iodine therapy. A computed tomography scan of the chest revealed a 2.9 cm lung mass in the right upper lobe. Following a needle core biopsy of the lung mass, the patient underwent a partial lobectomy.

### **Diagnosis: Synovial Sarcoma (Monophasic Spindle)**

#### **Differential Diagnosis:**

- Carcinoid
- Sarcomatoid carcinoma
- Synovial sarcoma
- Malignant mesothelioma

#### **Key Microscopic Features:**

- Cellular neoplasm with HPC-like vessels
- Bland spindle cells arranged in fascicles
- Occasional mitoses are present

#### **Immunohistochemical stains:**

- Positive: BCL2, CD99, NSE, CD56, EMA (in resection)
- Negative: CAM 5.2, AE1/AE3, EMA (in biopsy), CD117, CD34, S100, p16, Desmin, SMA, TTF, CK8, CK18

#### **Ancillary Studies:**

- SS18/SSX1 translocation detected

#### **Discussion:**

- Synovial sarcoma is an underdiagnosed malignancy of the lung; it is rarely associated with radiation therapy
- Thyroid carcinoma is associated with a risk of secondary malignancy; this risk is increased after treatment with radioactive iodine

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### **Case 3: Large Cell Calcifying Sertoli Cell Tumor**

*Presenter: Lily Mei MD; Attending: Michael Pins MD*

**Clinical History:** The patient is a 41-year-old male with no significant past medical history who presented with a tender, non-enlarging right testicular mass. Scrotal ultrasound confirmed a 1.8 cm mass with calcification. His serum tumor markers (alpha-fetoprotein, human chorionic gonadotropin and lactate dehydrogenase) were negative. The patient subsequently underwent a right radical orchiectomy.

#### **Diagnosis: Large Cell Calcifying Sertoli Cell Tumor**

##### **Differential Diagnosis:**

- Large cell calcifying Sertoli cell tumor
- Leydig cell tumor
- Sertoli cell tumor, NOS
- Adenomatoid tumor
- Seminoma

##### **Key Microscopic Features:**

- Large polygonal cells arranged in cords
- Abundant eosinophilic finely granular cytoplasm
- Scattered islands of calcification
- Patchy neutrophilic infiltrates

##### **Immunohistochemical stains:**

- Positive: S100, Inhibin, CD99 (rare)
- Negative: CAM 5.2

##### **Discussion:**

- Large cell calcifying Sertoli cell tumor is a rare but distinctive sex cord-stromal tumor with low malignant potential
- Clinical and histologic characteristics are helpful in assessing its malignant nature
- Diagnosis of large cell calcifying Sertoli cell tumor should prompt an evaluation for other components of Carney complex and Peutz-Jeghers syndrome

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**Case 4: Metastatic squamous cell lung carcinoma to the breast**  
*Presenter: Laura Sinada Bottros MD; Attending: Elliot Weisenberg MD*

**Clinical History:**

48-year-old female with a breast mass.

**Diagnosis: Metastatic squamous cell lung carcinoma to the breast**

**Differential Diagnosis:**

- Metaplastic breast carcinoma, squamous cell carcinoma type
- Metastatic carcinoma to breast

**Key Microscopic Features:**

Nests and cords of pleomorphic epitheloid cells with dense cytoplasm, vesicular chromatin and prominent nucleoli as well as many mitotic figures.

**Immunohistochemical stains:**

Positive: p63, CK5/6

Negative: CK7, CK20, ER, PR, Mucicarmine, GCDFP

**Discussion:**

- Metastases to the breast need to be considered if the histological appearance is unusual for a primary mammary tumor
- In some cases the histological appearance is similar to a primary mammary tumor and the clinical history is essential to making the diagnosis
- Elastosis and carcinoma in situ favors primary mammary carcinoma
- Immunohistochemistry using a panel of antibodies often plays a useful supplementary role to H&E-stained sections

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## **Case 5: Hemangioendothelioma NOS**

*Presenter: Mamta Pant MD; Attending: Tibor Valyi-Nagy MD*

**Clinical History:** The patient is a 65-year-old female with history of diabetes mellitus, hypertension and endometrial carcinoma, status post total hysterectomy, who presented to her primary care physician with sinus congestion, coryza, worsening headache and horizontal diplopia. Magnetic resonance imaging of the brain revealed a 5.5 cm lobulated enhancing expansile mass involving the clivus, sphenoid sinus and anterior aspect of the occipital condyle, eroding the anterior skull base. The patient underwent transsphenoidal resection of the mass. The mass doubled in size within two months of resection, with lytic destruction of the sphenoid sinus.

### **Diagnosis: Hemangioendothelioma NOS**

#### **Differential Diagnosis:**

- Hemangioma
- Epithelioid hemangioma
- Epithelioid hemangioendothelioma (EHE)
- Angiosarcoma

#### **Key Microscopic Features:**

Vasoformative lesion with a morphologic spectrum:

- Focal lobular pattern
- Well-formed blood vessels lined by hobnailed cells
- Dilated blood vessels lined by thin endothelial cells
- Primitive vessels lined by epithelioid endothelial cells
- Solid areas with sheets of epithelioid endothelial cells
- Irregular anastomosing vascular channels
- Cords and strands of epithelioid endothelial cells in myxoid stroma
- Focal cytologic atypia

#### **Immunohistochemical stains:**

- Positive: CD31, CD34, CAM 5.2 (focal), Ki-67 (10-15%)
- Negative: S100, EMA

#### **Ancillary Studies:**

- Negative for t(1,3)(p36;q25) WWTR1-CAMTA1 gene fusion and TFE gene rearrangement

#### **Discussion:**

- Primary vascular tumors of bone are an uncommon diverse group of tumors with variable clinical and radiologic presentation
- Vasoformative lesions show significant morphologic overlap, spanning across benign to malignant categories, hence their classification is challenging
- There are major differences in their clinical behavior and consequently treatment and prognosis, therefore it is paramount to distinguish them effectively and accurately
- The recent recognition of t(1;3)(p36.3;q25) that results in WWTR1-CAMTA1 gene fusion, can reliably identify EHE, irrespective of anatomic location

- However, a subset of this aggressive neoplasm, similar to our case, does not fit into any categories of the revised 2013 WHO classification of primary vascular tumors of bone
- A molecular signature of this neoplasm, though still under investigation, may better delineate them in the future

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