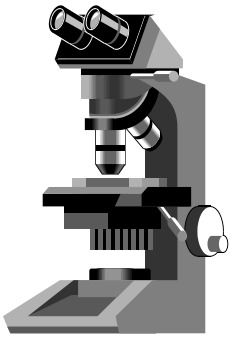
CALIFORNIA
TUMOR TISSUE REGISTRY

Lung and Mediastinal Pathology

Minutes – Subscription B

March 2016



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FILE DIAGNOSES

CTTR Subscription B March 2016

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Case 10: **MELANOMA,** Left Lung

CASE #1: **Accession No. 13401**

DIAGNOSIS: THYMOMA, Mediastinum

Diagnoses submitted in decreasing order of frequency:

Thymona Type AB, Mediastimum
Type B1
Type A

Discussion
Tumor is surrounded by a dense fibrous capsule continuous with the fibrous trabeculae within the mass. Tumor consists of ovoid and spindle cells densely packed in a fascicular arrangement. Nuclei are slightly elongated, small and ovoid and do not exhibit mitotic activity. In addition to the cellular areas, there are epithelial-like areas. Admixed small non-neoplastic lymphocytes are also present. This is a thymoma, mixed AB type.

Thymoma is the most common neoplasm in the anterior-superior mediastinum, common in older adults. Tumors may be associated with myasthenia gravis, or other autoimmune disorders. There is an increased risk of other malignancies in thymomas with cortical component. All thymic tumors have the potential for invasion. Tumor stage is the most important prognostic factor. Other poor prognostic factors include positive margins, capsular invasion (controversial). Positive stains: P63, CD 3 (T cells)

CASE #2: **Accession No. 14585**

DIAGNOSIS: YOLK SAC TUMOR, Mediastinum

Diagnoses submitted in decreasing order of frequency:

Malignant germ cell tumor with yolk sac component
Mature teratoma and yolk sac tumor

Discussion
This yolk sac tumor arose in a mediastinal teratoma and shows primitive tumor cells and Schiller Duvall bodies. Tumor is AFP+, CD 30 -.

Mediastinal germ cell tumors may be seminomatous, non-seminomatous teratomas (mature and immature), yolk sac tumors, embryonal carcinomas, choriocarcinomas, mixed germ cell tumors. Patients are usually males 20 -49 years of age. There is often elevated serum AFP, hCG, HPL, LDH, PLAP, associated with i(12p)+ acute leukemia, Klinefelter's syndrome (30x risk). The prognosis is worse than gonadal germ cell tumors.

CASE #3: **Accession No. 32004**

DIAGNOSIS: MUCORMYCOSIS WITH ASSOCIATED VASCULAR THROMBOSIS AND NECROSIS, Left Lung, Upper Lobe

Diagnoses submitted in decreasing order of frequency:

Mucormycosis, lung infarction
Invasive aspergillosis
Invasive fungal infection with infarction
Lymphomatoid granulomatosis
Vasculitis, probable autoimmune

Discussion
Necrotic lung tissue shows mucormycosis with associated vascular thrombosis. The angioinvasive fungal hyphae are large, ribbon-like, folded, non-septate with 90 degree branching and non-parallel walls.

Mucor is an ubiquitous fungus of class Zygomycetes. Opportunistic infections are seen in diabetics, neutropenics, patients with iron overload and on steroid therapy. Pulmonary infections are secondary to inhaled spores or secondary to rhinocerebral mucormycosis. This young patient had a history of ALL and recent bone marrow transplant.

CASE #4: **Accession No. 14939**

DIAGNOSIS: PAPILLARY ADENOMA, Left Lung

Diagnoses submitted in decreasing order of frequency:

Sclerosing pneumocytoma (sclerosing hemangioma)
Adenocarcinoma, minimally invasive adenocarcinoma
Langerhans cell histocytosis

Discussion
The tumor shows papillary proliferations containing fibrovascular cores lined by a single layer of cuboidal Non-ciliated epithelial cells resembling type II pneumocytes. There is no necrosis or significant cytologic atypia. Rare mitoses are present.

Pulmonary papillary adenomas are rare neoplasms (only a handful of cases have been reported) that predominantly occur in the periphery of the lung, but may arise centrally as in this case. Pulmonary papillary adenoma was previously considered to be benign however, because of its invasive growth pattern, it has been suggested that this neoplasm has intermediate malignant potential. Conservative surgical removal is recommended. Tumor cells are CK, CK 7, TTF-1, Napsin A, P63, B-catenin, surfactant apoprotein A +.

CASE NO #5: **Accession No. 5504**

DIAGNOSIS: ADENOCARCINOMA, Left Lung, Lower Lobe

Diagnoses submitted in decreasing order of frequency:

Adencarcinoma, acinar pattern
Adenosquamous carcinoma
Carcinoma with hepatoid features
Pleomorphic carcinoma

Discussion

Pleomorphic tumor cells are present with prominent nucleoli. Tumor cells are seen to be growing as solid nests and in alveolar and trabecular patterns. Tumor cells are CK, CK 7, TTF-1, Napsin A, P63, B-catenin, surfactant apoprotein A +.

Molecular testing is now routinely performed due to targeted therapies. Common mutations include EGFR, KRAS and BRAF, translocation of ALK, ROS1 and RET, and amplification of MET and FGFR1.

CASE #6: **Accession No. 7758**

DIAGNOSIS: INVASIVE ADENOCARCINOMA, Right Lung, Lower Lobe

Diagnoses submitted in decreasing order of frequency:

Invasive mucinous adenocarcinoma, micropapillary pattern
Adenocarcinoma papillary pattern predominant
Mixed mucinous and nonmucinous adenocarcinoma with predominant papillary architecture
Papillary adenocarcinoma with clear cells
Mucinous, colloid adenocarcinoma
Bronchioloalveolar carcinoma

Discussion

This is an invasive adenocarcinoma (6 cm) with clear mucinous and non-mucinous cells, demonstrating a lepidic predominant and micropapillary growth pattern.

CASE #7: **Accession No. 5916**

DIAGNOSIS: GIANT CELL CARCINOMA, Right Lung, Upper Lobe

Diagnoses submitted in decreasing order of frequency:

Lung adenocarcinoma

Metastatic carcinoma, poorly differentiated
Papillary malignancy
High grade neoplasm, rule out sarcoma
Rhabdomysarcoma
Mesothelioma
Large cell carcinoma
Pleomorphic carcinoma

Discussion
Malignant epithelial neoplasm predominantly composed of giant, pleomorphic cells, often with an inflammatory stroma and emperipolesis. Very aggressive lethal neoplasm, comprises <1% of all primary lung carcinomas, with extremely high male-to-female ratios (12:1 or more).

Giant cells are multinucleated, may resemble syncytiotrophoblasts and produce human chorionic gonadotropin. No cytotrophoblasts or sarcomatoid component present. Extensive hemorrhage and necrosis is common. Tumor cells are positive for cytokeratins AE1/AE3, and negative for CK-7, CK-20, TTF-1, and GFAP. Often PAS+ (cytoplasmic glycogen).

Differential diagnosis: choriocarcinoma, angiosarcoma, rhabdomyosarcoma.

CASE #8: **Accession No. 14971**

DIAGNOSIS: CARCINOID TUMOR, Right Lung, Upper Lobe

Diagnoses submitted in decreasing order of frequency:

Well-differentiated neuroendocrine tumor (low grade, carcinoid)
Atypical carcinoid
Large cell neuroendocrine carcinoma
Paraganglioma

Discussion
Uniform tumor cells are present with coarsely granular chromatin (salt and pepper) with trabecular growth pattern. Vasculature is prominent. No mitoses or necrosis is present.

Pulmonary neuroendocrine tumors (NETs) may be well differentiated low grade (carcinoid), intermediate grade and high grade (small cell, large cell neuroendocrine carcinomas). Low grade tumors may be polypoid, central (endobronchial), or peripheral. Multiple tumors may be associated with MEN syndrome. Some tumors may resemble paraganglioma with S100+ sustentacular cells.

CASE # 9: **Accession No. 31838**

DIAGNOSIS: MALIGNANT MESOTHELIOMA, Right Lung, Lower Lobe

Diagnoses submitted in decreasing order of frequency:

Malignant mesothelioma, epithelioid type
Biphasic mesothelioma

Discussion
This is an example of a biphasic predominantly epithelioid mesothelioma.
Risk factors for mesothelioma include asbestos exposure, radiation, erionite (used in road gravel). Tumors may show epitheliod (favorable), sarcomatoid (unfavorable), or biphasic/mixed (unfavorable) morphology. Tumor is mucicarmine+ (hyaluronic acid component), also calretinin, WT1, D2-40, CK 5/6+

CASE #10: **Accession No. 14011**

DIAGNOSIS: MELANOMA, Left Lung

Diagnoses submitted in decreasing order of frequency:

Malignant melonoma
Poorly-differentiated high grade malignancy, favor epithelioid mesothelioma
Pleomorphic sarcomatoid carcinoma with rhabdoid features
Anaplastic large cell lymphoma
Poorly differentiated adenocarcinoma

Discussion
This tumor shows plump pleomorphic tumor cells with eccentric nuclei amd macronucleoli. Binucleated tumor cells are also present. No melanin pigment or nuclear pseudoinclusions are identified.

Special stains and pertinent clinical history are required for diagnosis. This tumor is S100+. Almost all lung melanomas are metastatic, primary pulmonary melanoma is extremely rare (extrapulmonary origin and late recurrent tumors must be excluded).

References/Suggested Reading:

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Ann Thorac Cardiovasc Surg 2011; 17: 170–173 Malignant Melanoma of the Lung:
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