Lung Tumor Cases: Common Problems and Helpful Hints

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None
Case 1

- 69 y.o. F with an enlarging 1.4-cm partially ground-glass, partially solid nodule in RUL
- Core bxs obtained
ARS Polling Question

• How would you classify this lesion?
  1. Peribronchiolar metaplasia / reactive
  2. AAH
  3. AIS
  4. MIA
  5. Adenocarcinoma, with at least focal invasion
Case #1: My Diagnosis

- Adenocarcinoma, with at least focal invasion
Common Problem #1

• PB metaplasia, AAH, AIS, MIA, or invasive adenocarcinoma?

Helpful Hints

• Have a low threshold for calling “invasive” if stromal reaction or alveolar wall expansion is present
• AIS is extremely rare
• Know the CT findings

Case 2

• 73 y.o. M with history of “bx-proven” small cell carcinoma in LUL 6 months ago
• Now with large consolidative opacity in RML/RLL
ARS Polling Question

• How would you classify this lesion?
  1. Malignant
  2. Suspicious
  3. Atypical
  4. Benign
  5. Unsure – I need stains
Additional Clinical History

• Recent etoposide and radiation therapy
• Clinical suspicion: “Must be an adverse reaction to etoposide and/or radiation”
Case #2: My Diagnosis

- Organizing acute lung injury with striking reactive atypia and vacuolization of pneumocytes, consistent with reaction to drug (?) etoposide) and/or radiation
Common Problem #2

• Reactive or cancer?

Helpful Hints

• If acute lung injury is present, think twice before diagnosing cancer
  • DAD, AFOP, OP

• Know the clinical history

Case 3

• 64 y.o. M with diffuse bilateral pulmonary nodules

• Clinical impression: Granulomatous disease vs. metastases

• Transbronchial bxs obtained
ARS Polling Question

• How would you classify this tumor?
  1. Goblet cell metaplasia
  2. Atypical but insufficient for dx – recommend re-biopsy
  3. AIS, mucinous type
  4. Invasive mucinous adenocarcinoma
  5. I have no idea
Case #3: My Diagnosis

- Invasive mucinous adenocarcinoma

Common Problem #3

- Bland mucinous lesion

Helpful Hints

- Remember, mucinous adenoCa is:
  - Deceptively bland
  - Deceptively “lepidic”, but high-grade, aggressive, and virtually always invasive
  - Deceptively “enteric”
Case 4

- 91 y.o. M with bulky lung mass, pleural effusion, hilar lymphadenopathy, and possible metastasis to adrenal gland
- Pleural bxs obtained
**IHC Results**

- **Positive**
  - Vimentin
  - Pankeratin
  - CAM5.2
  - CD68

- **Negative**
  - S100
  - HMB45
  - Melan-A
  - CK5/6
  - MOC31
  - CEA
  - BerEP4
  - CD15
  - B72.3
  - desmin

  - CD3
  - CD20
  - CD45
  - CD79a
  - MUM1
  - CD34
  - Bcl-2
  - Calretinin
  - D2-40
  - SMA
ARS Polling Question

• How would you classify this tumor?
  1. Sarcomatoid carcinoma
  2. Undifferentiated pleomorphic sarcoma
  3. Sarcomatoid melanoma
  4. Sarcomatoid malignancy, NOS
  5. I want more stains

TTF-1
Case #4: My Diagnosis

• Sarcomatoid carcinoma, most likely of pulmonary origin with pleural metastasis

Common Problem #4

• Spindle cell lesion in lung

Helpful Hints

• For pleomorphic spindle cell tumors in the lung, sarcomatoid carcinoma is most likely
• Don’t forget lymphoma and metastasis (melanoma, GYN, etc.)
Case 5

- 68 y.o. M with a 20-pack-year smoking hx, with a 3.5 cm round, well-circumscribed, pleural-based mass
- Core bx obtained
ARS Polling Question

• What is the most likely diagnosis?
  1. Solitary fibrous tumor
  2. Malignant solitary fibrous tumor
  3. Sarcomatoid mesothelioma
  4. Sarcomatoid carcinoma
  5. Something else / not sure
Case #5: My Diagnosis

- Schwannoma, with degenerative changes
Common Problem #5

• Spindle cell lesion in pleura

Helpful Hints

• Think twice about malignancy when a pleomorphic spindle cell tumor lacks mitoses and necrosis

• Don’t forget the chest wall with “pleural” lesions

• Know the clinical hx and imaging findings

Case 6

• 39 y.o. F in motor vehicle accident

• Incidentally discovered 1.6 cm round, well-circumscribed nodule in LUL, faintly FDG-avid

• Wedge resection performed
ARS Polling Question

- What is the most likely diagnosis?
  1. Pulmonary hamartoma
  2. Myoepithelioma
  3. Primary pulmonary myxoid sarcoma
  4. Extraskeletal myxoid chondrosarcoma
  5. I have no idea
SMA

IHC Results

- **Positive**
  - SMA (weak, focal)

- **Negative**
  - AE1/AE3
  - Desmin
  - Cd34
  - S100
  - TTF-1

FISH Testing

- Positive for **EWSR1 rearrangement**
- Negative for **NR4A3 rearrangement**
FISH Interpretation – Caution!

• Tumors with *EWSR1* gene rearrangement
  • Ewing sarcoma / PNET
  • Clear cell sarcoma of soft tissue
  • Clear cell sarcoma-like tumor of GI tract
  • Desmoplastic small round cell tumor
  • Angiomatoid fibrous histiocytoma
  • Myoepithelial tumors
  • Extraskeletal myxoid chondrosarcoma
  • Primary pulmonary myxoid sarcoma
  • Hyalinizing clear cell carcinoma of salivary / bronchial glands
  • Mesothelioma
  • Hemangioma of bone
  • Low-grade fibromyxoid sarcoma / Sclerosing epithelioid fibrosarcoma
  • Myxoid liposarcoma
  • Osteosarcoma, small cell variant
  • Clear cell odontogenic carcinoma

FISH Interpretation – Caution!

• Tumors with *EWSR1-CREB1* translocation
  • Primary pulmonary myxoid sarcoma
  • Angiomatoid fibrous histiocytoma
  • Hyalinizing clear cell carcinoma of bronchial submucosal glands
  • Clear cell sarcoma of soft tissue
  • Clear cell sarcoma-like tumor of the GI tract
  • Hyalinizing clear cell carcinoma of salivary gland
Case #6: My Diagnosis

• Primary pulmonary myxoid sarcoma

Common Problem #6

• Bland myxoid lesion

Helpful Hints

• FISH is essential, but insufficient; combination of IHC and FISH needed

• EWSR1 rearrangements and even EWSR1-CREB1 translocations seen in many tumor types
Case 7

- 48 y.o. M with extensive smoking history, 7 cm mass in the right lung
- Core bxs obtained
ARS Polling Question

• How would you classify this tumor?
  1. AdenoCa, poorly diff.
  2. Squamous cell Ca, poorly diff.
  3. High-grade lymphoma
  4. High-grade angiosarcoma
  5. I give up... maybe I should retire early
Case #7: My Diagnosis

- NUT carcinoma
Common Problem #7

- The immunos don’t make sense

Helpful Hints

- Repeat markers, maybe in another lab
- Vascular, melanoma, lymphoma markers
- Remember tumors with weird IHC patterns:
  - NUT carcinoma
  - SMARCA4-deficient thoracic sarcoma