The New ERS/IASLC/ATS Classification of Lung Adenocarcinoma

How to sub-classify adenocarcinoma of the lung

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IASLC/ATS/ERS ADENOCARCINOMA CLASSIFICATION

- PREINVASIVE LESIONS
  - ATYPICAL ADENOMATOUS HYPERPLASIA
  - ADENOCARCINOMA IN SITU (formerly BAC pattern)*
    - non-mucinous
    - mucinous
- MINIMALLY INVASIVE ADENOCARCINOMA (a lepidic predominant tumor with <=5mm invasion)
- INVASIVE ADENOCARCINOMA
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- INVASIVE ADENOCARCINOMA
• Atypical adenomatous hyperplasia (AAH)
  • Adenocarcinoma in situ (AIS / pure BAC)
    - no gaps between cells, more severe atypias,
    - pure "lepidic" growth pattern along pre-existing alveolar walls
    - no evidence of invasion (stromal, vascular, pleural)
    - no central scar with tumors cells and stroma
  • A preinvasive lesion for bronchioloalveolar carcinoma (lepidic growth pattern predominant)
  • Focal lesion (~1-10 mm) most often less than 5mm
  • Atypical epithelial cells (mild to moderate) covering alveoli and respiratory bronchioles
Both preinvasive lesions (AAH and AIS) show a CT scan of ground glass opacity (GGO) and are often multiple
TENTATIVE PROPOSAL IASLC/ATS/ERS
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  (a lepidic predominant tumor with <=5mm invasion)

- INVASIVE ADENOCARCINOMA
Minimally invasive adenocarcinoma
Minimally invasive carcinoma: invasive scar
Definition of invasion

- Invasive growth into stroma with myofibroblastic proliferation
- Destruction of alveolar architecture
- Invasion into vessels, pleura
- Invasive adenocarcinoma patterns
  - Acinar
  - Papillary
  - Solid
  - Other types (fetal, signet ring, etc)
Invasion size measurement

A

– Invasion size < 5 mm

B

– Invasion size > 5 mm

Yim J. et al. Mod. Path. 2007
Stage I – II adenocarcinoma: influence of size of "BAC" vs invasion

Group 1 / 2 vs 3 / 4: \( p = 0.007 \)

No other factor associated with death
IASLC/ATS/ERS ADENOCARCINOMA CLASSIFICATION

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• Lepidic pattern predominant (formerly non-mucinous BAC pattern)
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• Papillary pattern predominant
• Micropapillary pattern, predominant
• Solid pattern predominant

*(semiquantitative assessment of patterns in 5-10% increments)*
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Subsolid nodule
Adenocarcinoma lepidic pattern predominant

Invasion

Lepidic
Lepidic pattern (formerly BAC):

- TTF1 +
- EGF-R mutation
- Solitary nodules
- Stage IA
Survival according to the size of central invasive scar

Small adenocarcinomas: < 3cm

- ≤ 5mm
- 5-15 mm
- > 15 mm

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Acinar adenocarcinoma
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Invasive adenocarcinoma: micropapillary pattern

- Micropapillary
- High grade

- TTF1+
- EGF-R mutation
- High stage
- Poor survival
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Adenocarcinoma solid with mucin

- TTF1+ or -
- Ras >> EGF-R mut
- High grade
STAGE 1 ADENOCARCINOMAS;
NATIONAL CANCER CENTER, TOKYO,
SLKM , New York

Noguchi M et al, in preparation
Yohsisawa et al. Modern Path. 2011
Small biopsies: differential diagnosis to minimize NSCLC NOS

- NSCLC (NOS)
- SCLC

NSCLC NOS

SC Carcinoma?

Adenocarcinoma?

Mucines +

TTF1 - P63 - Ck5/6

Mucines

NE markers

-}

All -

All +

Research of Mutations

EGFR

Adenocarcinoma

SC Carcinoma

NSCLC NOS

Mucines -

TTF1 -

P63 +

Ck5/6 +
TENTATIVE PROPOSAL IASLC/ATS/ERS ADENOCARCINOMA CLASSIFICATION

VARIANTS

• Invasive mucinous adenocarcinoma (formerly mucinous BAC)
• Colloid carcinoma
• Enteric
• Fetal adenocarcinoma (low and high grade)
Bronchioloalveolar carcinoma: mucinous type

- TTF 1 negative
- Ras mutation only
- Multiple nodules
- Lobar consolidation
- High stage (T4)
Mucinous adenocarcinoma with lepidic pattern
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PREINVASIVE LESIONS: AAH, AIS

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Variants

- Invasive mucinous adenocarcinoma (formerly mucinous BAC)
- Colloid carcinoma
- Fetal adenocarcinoma (low and high grade)
- Enteric
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