EARLY ASSESSMENT OF INTERSTITIAL LUNG DISEASE: OPPORTUNITIES IN LUNG CANCER SCREENING

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Lung Fibrosis

- Scarring of the lung parenchyma
HOW MANY PEOPLE HAVE PULMONARY FIBROSIS?
951 participants

- 63 (6.6%) had CT evidence of ILD
- 16 (1.7%) had HC.

Significant predictors of ILD were:
- male gender ($p=0.003$)
- age ($p<0.0001$)
- pack years of cigarette smoking ($p = 0.0003$)
- emphysema ($p = 0.004$)

Age and male gender remained significant on multivariate analysis.
WHAT IS EARLY FIBROSIS?
IPF

UIP Pattern
• Subpleural fibrosis
• Basilar fibrosis
• Reticulations
• Honeycombing

Possible UIP Pattern
• Subpleural fibrosis
• Basilar fibrosis
• Reticulations
• Honeycombing
Possible UIP is *Early* UIP

- **103** patients with UIP pattern

- **68** had PRE-HC on the initial CT, **32** (47%) progressed; median follow-up **51** months.

- **36** patients with PRE-HC had no progression to HC but **16** of them, had accelerations to more extensive PRE-HC with a median follow-up of **23** months.
Types of Fibrosis

Known Causes
- Hypersensitivity Pneumonitis
- Asbestosis
- Drug induced

Idiopathic
- UIP
- NSIP
- RBILD
- DIP
- COP
- AIP
- LIP
- PPFE
RADIOLOGIC DIFFERENTIATION OF FIBROSIS
UIP

- Subpleural
- Basilar
- Honeycombing
NSIP

- Lower lobe
- Bronchovascular
- **Homogeneous**
- Dilated esophagus
- Peripheral sparing
CHP

- Upper lobe
- Peribronchiolar fibrosis
- Air trapping
CHP
NSIP
NSIP
CHP
NSIP
CHP
UIP
HOW MANY PEOPLE WITH FIBROSISS HAVE LUNG CANCER?
Evolving concept

• Smoking is an enriched population to study fibrosis

• Fibrosis is an enriched population to study lung cancer
This study found that IPF patients are much more likely to develop lung cancer than the general population.

- IPF patient cancer prevalence: 4.8%-48%
- General prevalence in smokers: 1.0%-6.4%

How Big of a Problem is Lung Cancer in Patients with Fibrosis?

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<thead>
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<th>1 year</th>
<th>5 years</th>
<th>10 years</th>
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<td>3.3 %</td>
<td>15.4%</td>
<td>54.7%</td>
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Similarities between fibrosis and cancer

- Genetic alteration (p53 gene, telomere shortening)
- Resistance to apoptosis
- Myofibroblast behavior (forefront of cancer, TGFβ mediated)
- EMT is key feature of both
How should we screen fibrosis patients for lung cancer?

• IELCAP
• NLST
• Fleischner
Patient with UIP (6 months)
Patient with NSIP (3 months)
NSIP (6 weeks)
Treatment Options

- Model after IELCART (multi-institution)
- Enroll patients with fibrosis and cancer
- 4 treatment options and see what works best
- Document pathology, clinical, and radiology
Lung Fibrosis