Early Neoplasia of the Foregut: Enhanced Imaging; Diagnostic Techniques

Prateek Sharma, MD
Kansas City
Neoplasia Detection: A Decade of Progress

Screening/Diagnosis

Surveillance/Detection
Neoplasia Detection: A Decade of Progress

Screening/Diagnosis

Surveillance/Detection
Endoscopic BE: Prague C&M Criteria

- Based on – Circumference and Maximum extent
- Patient with 5 cm long Barrett’s, distal 2 cm circumferential and proximal 3 cm in form of a tongue

Barrett’s: C2M5

Sharma P et al, Gastroenterology 2006
BE<1 cm: Irregular z-line - Results from a large, multicenter, cohort study

4263 BE patients

1791 NDBE included

167 BE<1 cm

- Caucasians 86%
- Males: 84%
- Median follow-up: 5.9 years

None progressed to HGD/Cancer

71 incident cancers from BE>1 cm

Thota P et al. Gastroenterology 2017
BE: A Decade of Progress

Screening/Diagnosis

Surveillance/Detection
Missed cancers in Barrett’s esophagus

Meta analysis of 15 – 24 studies
(820 total cases)

Cancers detected within 1 year

20 – 25% of all BE cancers were detected within 1 year of index endoscopy

Visrodia K et al. Gastro 2016
## Low Detection Rates of Visible Lesions

<table>
<thead>
<tr>
<th>Histology</th>
<th>N</th>
<th>Referral unit</th>
<th>Specialized unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dysplasia</td>
<td>69</td>
<td>16 (57%)</td>
<td>65 (94%)</td>
</tr>
<tr>
<td>Cancer</td>
<td>28</td>
<td>29 (42%)</td>
<td>28 (100%)</td>
</tr>
</tbody>
</table>

Cameron GR et al. GIE 2015
Barrett’s Inspection Time (BIT)

% Patients with HGD/EAC

- BIT ≤ 2 minutes: 15%
- BIT 3-4 minutes: 32%
- BIT 5-6 minutes: 46%
- BIT ≥ 7 minutes: 69%

Gupta N et al. GIE 2012
Inspection time and gastric cancer

- 837 EGD examinations
- Detection of gastric lesions
- EGD time $\geq 7$ minutes: 3 fold increase in detection of gastric neoplasia

Teh JL et al. CGH 2015
What Can We Improve?

Improving Ability to Obtain Target Biopsies!
## Performance Characteristics of the BING International Classification

<table>
<thead>
<tr>
<th></th>
<th>Accuracy (95% CI)</th>
<th>Sen (95% CI)</th>
<th>Spec (95% CI)</th>
<th>NPV (95% CI)</th>
<th>PPV (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experts</td>
<td>92.2%</td>
<td>91.1%</td>
<td>92.9%</td>
<td><strong>94.6%</strong></td>
<td>88.5%</td>
</tr>
</tbody>
</table>

ASGE PIVI Guidelines for Endoscopic Imaging Techniques

<table>
<thead>
<tr>
<th>Advanced imaging technique should meet or exceed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per patient sensitivity ≥ 90%</td>
</tr>
<tr>
<td>Negative Predictive Value ≥ 98%</td>
</tr>
<tr>
<td>Specificity ≥ 80%</td>
</tr>
</tbody>
</table>

Sharma P et al. GIE 2012
AGA and ASGE Statements

Imaging technologies that reached PIVI thresholds
- Chromoendoscopy (acetic acid)
- Narrow band imaging
- Confocal laser endomicroscopy

Endoscopists who have met the PIVI thresholds with specific enhanced imaging techniques, use of these technique in BE patients is appropriate

Sharma P et al. CGH 2015
Thosani N et al. GIE 2016
Neoplasia Detection: The Future

Screening/Diagnosis

Surveillance/Detection
Why is This Important: Neoplasia Detection Rate (NDR) in BE

“The percentage of BE patients who have neoplasia (HGD or cancer) on screening endoscopy”

• Performing high-quality endoscopy
• Adequate biopsy sampling
• Barret's or esophageal mucosa examination
• Appropriate recognition of neoplastic lesions

Sharma P et al, GIE. 2018
Conclusions

- Prague classification
- Seattle biopsy protocol
- Inspection Time
- Ignore irregular z line
- Detect more lesions