SESSION 1: How to report neoplastic lesions?

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Introduction

Neoplastic lesions are called **superficial** when their endoscopic appearance suggests that invasion is limited to the mucosa and submucosa.

**Low-grade intraepithelial neoplasia**
- Adenoma/dysplasia

**High-grade neoplasia (intraepithelial or intramucosal)**
- Adenoma/dysplasia
- Noninvasive carcinoma
- Suspicious for invasive carcinoma
- Intramucosal carcinoma (lamina propria invasion)

**Submucosal carcinoma**

The endoscopic appearance has a predictive value for invasion into the submucosa, which is critical for the risk of nodal metastases.

Update on the Paris endoscopic classification of superficial neoplastic lesions in the digestive tract. Endoscopy 2005;37:570-8

Basic principles for the endoscopic diagnosis of upper GI neoplastic lesions

Detection
- WLE & Chromoendoscopy
- Narrow band imaging
- Autofluorescence endoscopy

Characterization
- Differentiation
- Delineation
- Invasion assessment

Reporting
- Basic reporting
- Advanced reporting
- Image documentation
How to detect the lesion?

Use careful conventional WLE examination

- The proposed criteria for a cancerous lesion are as follows: conventional endoscopic findings of
  - a well-demarcated lesion
  - irregularity in color/surface pattern

- Conventional white light endoscopy is limited to detecting neoplastic lesions on the basis of gross morphological changes

- Thus, magnification chromoendoscopy or narrow-band imaging (NBI) endoscopy with or without magnification may be offered in these cases as it improves diagnosis of such lesions

How to detect the lesion?
Use “Red flag” techniques

Chromoendoscopy:
• Iodine-potassium iodide solution (1.5-2.0%) for the squamous stratified epithelium
• Indigo carmine solution (0.5-1.0%) for columnar epithelium

Narrow-band imaging (other optical image-enhanced techniques)
• SCC: “brownish area”
• EGC: NBI Olympus Exera II – too dark for screening, NBI Olympus Exera III – under research

Autofluorescence endoscopy
• High sensitivity but low specificity
• Diagnostic value is under research

Conventional endoscopy and subsequent image-enhanced endoscopy can both contribute to the detection of early esophagogastric cancer

Update on the Paris endoscopic classification of superficial neoplastic lesions in the digestive tract. Endoscopy 2005;37:570-8
How to Characterize:
Use Advanced Imaging

For delineation, differentiation (non-neoplastic or neoplastic) and invasion assessment (prediction)

High-Resolution Endoscopy with chromoendoscopy; High-Magnification Endoscopy (HME) combined with:
• Chromoendoscopy
• Narrow Band Imaging
For correct reporting it is imperative the correct measurement the size of the lesion. For such purpose we firstly should **delineate** it.

NBI may enhance the mucosal surface contrast without the use of dyes in cases of EGC. Demarcation areas (black arrows) of type IIc EGC are clearly diagnosed using NBI.

WLE: flat reddish area with unclear margins  
NBI: brownish area corresponds to margins of the lesion  
Chromoendoscopy: margins of the lesion are clearly defined

NBI may enhance the mucosal surface contrast without the use of dyes in cases of EGC. Demarcation areas (black arrows) of type IIc EGC are clearly diagnosed using NBI.
**Organ specific approach for Differentiation of the lesion by HME-NBI**

<table>
<thead>
<tr>
<th>IPCL type I</th>
<th>Background</th>
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</thead>
<tbody>
<tr>
<td>IPCL type II</td>
<td>Inflammation</td>
</tr>
<tr>
<td>IPCL type III</td>
<td>Normal IPCL with area formation</td>
</tr>
<tr>
<td>IPCL type IV</td>
<td>Slight change of IPCL</td>
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<tr>
<td>IPCL type V1</td>
<td>Irregularly dilated IPCL</td>
</tr>
<tr>
<td>IPCL type V2</td>
<td>Type V1 + elongation</td>
</tr>
<tr>
<td>IPCL type V3</td>
<td>Highly destructed IPCL</td>
</tr>
<tr>
<td>IPCL type Vn</td>
<td>New tumor vessels</td>
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</tbody>
</table>

**Esophagus:** microvessels changes intrapapillary capillary loops - IPCL

**Stomach:** microvessels changes & fine mucosal structure changes

- **Microvascular pattern (V):**
  - Regular microvascular pattern
  - Irregular microvascular pattern
  - Absent microvascular pattern

- **Microsurface pattern (S):**
  - Regular microsurface pattern
  - Irregular microsurface pattern
  - Absent microsurface pattern

VS classification system for differential diagnosis between cancerous and noncancerous lesions based on correlation between the microanatomy and actual images as visualized using HME-NBI (Yao, 2009, Kaise, 2008, Yao 2013)

IPCL pattern classification of the superficial microvascular architecture in the squamous epithelia (H. Inoue, 2001)
Differentiating between non-neoplastic and neoplastic lesions

White light endoscopy

NBI

NBI+High-Magnification

Histology: focal gastritis with intestinal metaplasia

Histology: well-differentiated adenocarcinoma
How to Report:
Use the Paris Classification of Superficial Neoplastic Lesions in the Digestive Tract

Type 0 (superficial lesions)

- **Protruding**
  - 0-Ip Pedunculated
  - 0-Ip Sessile

- **Nonprotruding and nonexcavated**
  - 0-IIa Slightly elevated
  - 0-IIb Completely flat
  - 0-IIc Slightly depressed
  - 0-IIc + IIa
  - 0-IIa + IIc Elevated and depressed types

- **Excavated**
  - 0-III Ulcer
  - 0-III + IIc Excavated and depressed types

Update on the Paris endoscopic classification of superficial neoplastic lesions in the digestive tract.
Endoscopy 2005;37:570-8
How to measure the lesion?

**Use a biopsy forceps**

The size (diameter, height, depth) of the lesion is estimated as precisely as possible, preferably using a graduated gauge.

**A biopsy forceps is a helpful reference standard**

- The diameter of forceps with open jaws is **6 mm**
- The diameter of forceps with closed jaws is **2.5 mm**
- The diameter of a single jaw is **1.2 mm**

Update on the Paris endoscopic classification of superficial neoplastic lesions in the digestive tract. Endoscopy 2005;37:570-8
Type 0-I and 0-IIa: how to distinguish?

The distinction between a sessile (protruding) lesion and a slightly elevated (nonprotruding) lesion is based on the extent of the elevation from the adjacent mucosa.

**The cut-off limit**

1.2 mm in the stratified epithelium of the esophagus

2.5 mm in the columnar epithelium

Update on the Paris endoscopic classification of superficial neoplastic lesions in the digestive tract. Endoscopy 2005;37:570-8
Type 0-IIc and 0-III: how to distinguish?

The distinction between a slightly depressed lesion and an excavated lesion is based on the depth of the depression from the adjacent mucosa.

The cut-off limit

1.2 mm in the columnar epithelium

0.5 mm in the stratified epithelium of the esophagus

Update on the Paris endoscopic classification of superficial neoplastic lesions in the digestive tract. Endoscopy 2005;37:570-8
Type 0-I

**Esophagus**

Prevalence: 16%
Frequency of submucosal invasion: 79%

**Stomach**

Prevalence: 3%
Frequency of submucosal invasion: 57%

Update on the Paris endoscopic classification of superficial neoplastic lesions in the digestive tract. Endoscopy 2005;37:570-8
Type 0-IIa

Esophagus

Prevalence: 20%
Frequency of submucosal invasion: 79%

Stomach

Prevalence: 17%
Frequency of submucosal invasion: 79%

Update on the Paris endoscopic classification of superficial neoplastic lesions in the digestive tract. Endoscopy 2005;37:570-8
Type 0-IIb

Esophagus

Prevalence: 14%
Frequency of submucosal invasion: 15%

Stomach

Prevalence: <1%
Frequency of submucosal invasion: 20%

Update on the Paris endoscopic classification of superficial neoplastic lesions in the digestive tract. Endoscopy 2005;37:570-8
Type IIc

Esophagus

Prevalence: 45%
Frequency of submucosal invasion: 27%

Stomach

Prevalence: 78%
Frequency of submucosal invasion: 40%

Update on the Paris endoscopic classification of superficial neoplastic lesions in the digestive tract. Endoscopy 2005;37:570-8
Type III

Esophagus

Prevalence: 5%
Frequency of submucosal invasion: 84%

Stomach

Prevalence: <1%
Frequency of submucosal invasion: 40%

Update on the Paris endoscopic classification of superficial neoplastic lesions in the digestive tract. Endoscopy 2005;37:570-8
Combined types: elevated and depressed

0-IIa + IIc is an elevated lesion with a central depression at its top

0-IIc + IIa is a depressed lesion with elevated borders or a central elevation

Update on the Paris endoscopic classification of superficial neoplastic lesions in the digestive tract. Endoscopy 2005;37:570-8
How many endoscopic images do we need for the final record?
The protocol proposed by the ESGE includes only 4 pictures of the stomach. Endoscopists with longer procedure times, who take more than 4 pictures, detect more pathology than endoscopists with shorter procedure times and fewer pictures.

Standardized protocol of endoscopic images with more than 20 images of esophagus and stomach + images of each biopsy site in Yaroslavl Regional Cancer Hospital using EMIS endobase.

Prof. Toru Ito, Kanazawa Medical University takes more than 30 images of stomach for screening EGC.

Take home messages / Learning objectives

- The endoscopic diagnosis of early gastric cancer is divided into three main steps: detection, characterization and reporting.
- Magnification chromoendoscopy or NBI endoscopy with or without magnification added to WLE may improve the diagnosis of neoplastic lesions.
- The endoscopic appearance has a predictive value for invasion into the submucosa.
- The reporting of GI neoplastic lesions should be based on Paris classification as a current standard.

Update on the Paris endoscopic classification of superficial neoplastic lesions in the digestive tract. Endoscopy 2005;37:570-8
Management of precancerous conditions and lesions in the stomach (MAPS) Endoscopy 2012; 44: 74–94
Conclusion:

• When a potentially resectable premalignant or malignant lesion is detected, two potential erroneous decisions are: **unnecessary resection of a nonneoplastic lesion; and inappropriate excision of a carcinoma with deep submucosal invasion.**

• Rigorous analysis of the lesion can serve as a safeguard against erroneous decisions.

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The endoscopic detection, characterization and reporting according to Paris classification help predict the extent of invasion into the submucosa and thus the choice between endoscopic or surgical treatment.
Superficially elevated lesions of gastric body

HME-NBI. Absence of MS pattern, irregular MV pattern (“fine network”)

Histology (H&E, x150): well-differentiated adenocarcinoma

HME-NBI. Regular MS pattern (tubular), regular MV pattern (open-loop)

Histology (H&E, x150): chronic gastritis
Differentiating between neoplastic lesions (adenoma and adenocarcinoma)

- In cases of gastric neoplasia of the superficial elevated type, it is sometimes impossible to visualize the MV pattern due to white opaque substance obscuring the subepithelial microvascular pattern.
- The regular distribution of this substance characterized adenomas in 100% cases according to Japanese data. In contrast, most of carcinomas with WOS showed an irregular WOS distribution.

Yao, K et al. Gastrointest Endosc 2008

WOS could be an alternative new optical sign for discriminating adenoma from carcinoma

Adenoma with LGD: regular reticular distribution of WOS during NBI-HME

Early gastric cancer: irregular reticular distribution of WOS during NBI-HME