Diagnosis of invasion depth of surficial esophageal cancer by Japanese Classification of Magnifying Endoscopy for Early Squamous Cell Carcinoma (Retrospective single center study)

Rieko Nakamura1, Tai Omori2, Tsunehiro Takahashi1, Norihito Wada1, Hirofumi Kawakubo1, Hiroya Takeuchi1, Yuko Kitagawa1

1)Department of Surgery, Keio University, School of Medicine 2)Department of Surgery, Kawasaki Municipal Ida hospital

[Background]
Recently, the Japan esophageal society constructed a new classification. This classification was intended to be simple and easily applicable in general clinical practice. But the true accuracy of diagnosis is under consideration.

[Aim]
To investigate the accuracy of diagnostic criteria based on Japanese classification of magnifying endoscopy for surficial esophageal squamous cell carcinoma (SESCC), the examination by magnifying endoscopy of each SESCC cases was reviewed according to the classifications. Furthermore, in misdiagnosis cases, the causes of misdiagnosis were investigated.

[Cases and Methods]
Between April 2011 and December 2012, the cases of SESCC undergone endoscopic submucosal dissection (ESD) at Department of Surgery, Keio University School of medicine were extracted and only the cases with appropriate evaluation by magnifying endoscopy before the endoscopic treatment were included and the findings of magnifying endoscopy were reviewed as detail. The endoscopic diagnoses of cancer invasion depth by diagnostic criteria on Japanese classification of magnifying endoscopy for SESCC and the final histopathological diagnoses of resected cancer lesions were compared. The accuracy rate was calculated according to classifications of magnifying endoscopy and the causes of misdiagnoses cases were investigated.

[Cases]
Period: From April 2011 to December 2012
Cases:
• Surfical esophageal cancer cases conducted endoscopic resection at Department of General Surgery, Keio University, School of Medicine
• Possible cases to compare of findings of magnifying endoscopy and pathological findings of resected specimen

[Methods]
By experienced specialists on diagnoses of surfical esophageal cancer, reexamination of depth of cancer invasion was conducted based on findings of magnifying endoscopy

1. Depth of invasion of cancer was diagnosed by Japanese Classification of Magnifying Endoscopy for Early Squamous Cell Carcinoma
2. When diagnosis by vessels was difficult, traditional diagnosis of depth of invasion was conducted
3. Endoscopic diagnosis of depth of cancer invasion and pathological diagnosis of resected specimen were compared

[Items for examination]
1. Correct diagnosis rate
2. Sensitivity and specificity
3. Causes of misdiagnosis

[Results]
90 cases

[Japanese Classification of Magnifying Endoscopy for Early Squamous Cell Carcinoma]

<table>
<thead>
<tr>
<th>Type</th>
<th>B1</th>
<th>B2</th>
<th>B3</th>
</tr>
</thead>
<tbody>
<tr>
<td>EP/LPM</td>
<td>MM/SM1</td>
<td>MM/SM2</td>
<td>SM2</td>
</tr>
</tbody>
</table>

Diagnostic criteria:
1. All vessels are diagnosed as B1 → EP/LPM
2. B2 vessel is recognized even slightly when MM/SM1
3. B3 vessel is recognized even slightly when SM2
4. If the vessel is not visible, conventional diagnoses by morphology are conducted

[Reasons for Misdiagnosis]
B1 cases
6 cases (8.5%)
1. The deepest cancer invasion area is small
2. The surface of invasion area is covered by normal epithelium
3. Lamina propria is thin and muscularis mucosa is directly under the epithelial

B2 cases (actually SM2 cases)
3 cases (18.7%)
1. Insufficient observation for large lesion
2. Small range of deepest cancer invasion lesion
3. Invisible vessels on the lesion for white mass

B2 cases (actually EP/LPM cases)
4 cases (25%)
1. Diagnosis of B2 vessel is inappropriate
2. The form is taken into account

[Conclusion]
The accuracy of diagnosis of SESCC invasion depth using the diagnostic criteria based on Japanese classification of magnifying endoscopy for SESCC was over 90% of accuracy rate in B1 cases, while about 50% in B2 cases. In B1 cases, consistency of B1 vessels and depth of cancer invasion was high in the area that cancer vessels could be diagnosed. In B2 cases, the cancer lesion was often large which caused inadequate examination or modified surficial vessels led to be difficult to diagnose depth of cancer invasion. So that, the consistency of B2 vessels and histopathological cancer invasion depth was not so high in the result.