The Significance of IHCS of EGC Following ESD, with a Focus on Invasion Depth & Lymphovascular Invasion

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Purpose: With the increase in incidence of early gastric cancer (EGC), endoscopic resection is now considered standard treatment for EGC in Korea and Japan. Therefore, precise assessment of the risk of lymph node metastasis in specimens has become essential. Many studies have reported various predictive factors for lymph node metastasis (LNM) in EGC. lymphovascular invasion (LVI) was consistently correlated with LNM in many studies. The aim of this study was to evaluate the relationship between the depth of invasion and the presence of lymphovascular invasion in patients who underwent ESD for EGC, using immunohistochemical staining (IHCS).

Methods: Between May 2005 and May 2010, a total of 348 EGCs from 321 patients were included. The presence of LVI was determined by Factor VIII-related antigen and D2-40 assessment. LVI was indicated by clusters of tumor cell in vessels or lymphatic vasculature whose endothelium was stained positive for Factor VIII-related antigen or D2-40, respectively.

Results: 100 patients met the absolute indication criteria and 221 patients met the expanded indication criteria after ESD. Of the 100 patients who met the absolute indications of ESD, LVI was present in none of specimens following HES and IHCS. Of the 221 patients who met the expanded criteria, LVI was present in 11 (5%) patients. When the depth of tumor invasion was divided into M2, M3, and SM1, LVI was present in 0/159 (0%), 2/133 (1.5%), and 9/29 (31%) patients respectively. Of the 11 cases with LVI on IHCS only 1 was positive on HES (100% vs. 9.1%, p=0.044). Resected specimens examined by HES showed a false-negative rate of LVI in 3.9% and a false-positive rate in 0%.

Conclusions: LVI was only present in EGCs that invaded the muscularis mucosa or deeper. This likely due to the distribution of lymphatic vessels in the deep mucosa. Although IHCS more accurately detects LVI compared to HES it may be rational to apply IHCS only to EGCs that invade the muscularis mucosa or submucosal layer.

Key Words: EGC; LVI; IHCS