

Role of probe-based confocal laser endomicroscopy target biopsy for the molecular and histopathological study of gastric cancer

Sang Kil Lee (Department of Internal Medicine, Severance Hospital, Institute of Gastroenterology, Yonsei University College of Medicine, Seoul, Korea), Chan Hyuk Park (Department of Internal Medicine, Severance Hospital, Institute of Gastroenterology, Yonsei University College of Medicine, Seoul, Korea), Jung-Ho Yoon (Department of Internal Medicine, Severance Hospital, Institute of Gastroenterology, Yonsei University College of Medicine, Seoul, Korea), Sung Hoon Noh (Department of Surgery, Severance Hospital, Yonsei University College of Medicine, Seoul, Korea)

BACKGROUND: High yield of biopsy is mandatory to perform molecular genetic research using endoscopically obtained gastric cancer tissues. We aimed to evaluate whether probe-based confocal laser endomicroscopy (pCLE) can increase the yield of endoscopic biopsy for gastric cancer compared to white light endoscopy (WLE).

HYPOTHESIS: We aimed to evaluate whether probe-based confocal laser endomicroscopy (pCLE) can increase the yield of endoscopic biopsy for gastric cancer compared to white light endoscopy (WLE).

METHODS: Patients with gastric cancer were randomly allocated to either pCLE or WLE group. In the pCLE group, lesions were examined by both WLE and pCLE. In both groups, five pieces of biopsy for histopathological evaluation and three pieces of biopsy for tumor marker were obtained from cancerous lesions. The primary endpoint was to compare the proportion of cancer cells in biopsy samples between the groups.

RESULTS: Thirty patients were enrolled in the study. Number of patients with undifferentiated cancer was 9 (60.0%) and 8 (53.3%) in the WLE and pCLE group, respectively. The proportion of cancer cells in biopsy samples did not differ between the groups ($P=0.136$), it was higher in the pCLE group than in the WLE group in a subgroup analysis for undifferentiated cancers (median [interquartile range]; 65% [45–77.5%] vs. 30% [15–40], $P=0.010$). Expression ratio of tumor markers including CEA, GW112, HOTAIR, and H19 tended to be higher in the pCLE group than in the WLE group. pCLE-targeted biopsy provided superior result in terms of proportion of cancer cells in biopsy samples compared to WLE-targeted biopsy, especially for gastric cancers with undifferentiated histology. Tumor markers tended to be highly expressed in biopsy samples obtained under pCLE than WLE.

Conclusion: pCLE-targeted biopsy provided superior result in terms of proportion of cancer cells in biopsy samples compared to WLE-targeted biopsy, especially for gastric cancers with undifferentiated

histology. Tumor markers tended to be highly expressed in biopsy samples obtained under pCLE than WLE.