学 位 論 文 の 要 旨

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学 位 論 文 名　Poor Inter-Observer Agreement on the Endoscopic Diagnosis of Eosinophilic Esophagitis Among Japanese Endoscopists.

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論 文 内 容 の 要 旨

INTRODUCTION

Eosinophilic esophagitis (EoE) is a delayed type of allergic disease characterized by symptoms of esophageal dysfunction, typical endoscopic findings, including linear furrows, concentric rings, edema, and white exudates, and dense esophageal eosinophilia. For accurate diagnosis of EoE, a histopathological examination of biopsy specimens obtained by esophagoscopy is the most important and useful method. Therefore, when patients complain of esophageal symptoms, endoscopic biopsy sampling is recommended even in the absence of characteristic endoscopic findings of EoE. On the other hand, recent reports have shown the presence of several characteristic endoscopic findings in affected patients and suggested that such findings are important indicators for biopsy sampling. However, the diagnostic consistency among Japanese endoscopists based on those findings has not been fully analyzed, as the disease is a rare condition in Japan.

In the present study, we analyzed the inter- and intra- observer agreement with regard to EoE findings noted by endoscopists in Japan.

MATERIALS AND METHODS

Forty endoscopists, including 20 with board certification from the Japan

Gastroenterological Endoscopy Society (JGES), participated in this study. A total of 50 endoscopic still images were selected for use, of which 30 images were obtained during examinations of active EoE patients prior to treatment and showed typical endoscopic findings of the disease, while the other 20 images were obtained from individuals without EoE, none of whom had findings of eosinophilic infiltration in the esophageal epithelium obtained by biopsy.

All participating endoscopists met together in a meeting room, where one of the authors explained representative endoscopic findings indicating EoE. Thereafter, the 50 endoscopic images were presented to them in randomized order. Each endoscopist was asked to individually evaluate the presence or absence of linear furrows, concentric rings, edema, and white exudates, and then determine whether the image presented was taken from a patient with or without EoE. No specific clinical information about the patients was given. Four weeks later, the same 50 endoscopic images were re-examined in different order to assess the intra-observer agreement.

For this analysis, we first estimated the overall inter-observer agreement for endoscopic diagnosis of EoE based on characteristic endoscopic findings. Next, we examined the agreement regarding identification of each of the 4 common endoscopic characteristics (linear furrows, concentric rings, edema, white exudates). Inter-observer agreement was calculated according to Fleiss' kappa calculation and intra-observer agreement according to Cohen's kappa calculation. In this study, a kappa value less than 0.4 was defined as poor agreement. The study protocol was evaluated and approved by the Ethical Committee of Shimane University.

RESULTS AND DISCUSSION

Overall inter-observer agreement for endoscopic diagnosis of EoE based on characteristic endoscopic findings was poor (kappa value 0.34, 95% CI 0.33–0.35). When each characteristic endoscopic finding was separately calculated, the highest level of inter-observer agreement was found for linear furrows (0.48, 0.47–0.48), followed by concentric rings (0.34, 0.33–0.35) and edema (0.26, 0.25–0.27), while white exudates had the lowest level (0.21, 0.20–0.22). When diagnostic agreement was compared between board-certified and non-certified endoscopists, the kappa value of the board-certified group was significantly higher for diagnosis of EoE, as well as

for identification of linear furrows, edema, and white exudates.

Of the 40 endoscopists in the first analysis, 33 (16 board certified) participated in the second analysis. The intra-observer agreement for EoE diagnosis, calculated using kappa value, was higher than the inter-observer agreement (kappa value 0.52, 95% CI 0.47–0.57). As for individual endoscopic findings, the highest level of agreement was again found for linear furrows (0.55, 0.48–0.63), followed by concentric rings (0.51, 0.46–0.55) and edema (0.43, 0.33–0.52), while there was a low level of agreement for white exudates (0.28, 0.15–0.37). There were no significant differences between the board-certified and non-certified groups for agreement regarding diagnosis of EoE, or for identification of each characteristic endoscopic finding.

Our results regarding inter-observer agreement for diagnosis based on endoscopic findings indicate those to be insufficient diagnostic markers of EoE even with board-certified endoscopists. This may be due to lack of experience with diagnosis of EoE by endoscopists in Japan as compared to those in Western countries. Indeed, of the 40 enrolled endoscopists, only 12 had experience with diagnosis of EoE based on endoscopic results. In addition, most of the experienced endoscopists had actually diagnosed only a few cases of EoE.

Among the endoscopic findings suggesting EoE used in our study, linear furrows had the highest and only acceptable level of diagnostic reliability. In previous studies, we have consistently found that the presence of liner furrows provides the highest sensitivity and specificity for endoscopic diagnosis. Other investigators have also reported that it is the most frequently found endoscopic abnormality in patients with EoE. Together, these results indicate the importance of linear furrows shown by endoscopy for accurate EoE diagnosis, though other endoscopic findings may have some value.

CONCLUSION

Inter-observer agreement regarding recognition of characteristic features used for endoscopic diagnosis of EoE among Japanese endoscopists did not reach a clinically acceptable level likely due to lack of experience. Among endoscopic findings suggesting EoE, linear furrows were the only characteristic to show acceptable diagnostic reliability.