

metabolites, and has recently been applied to search for biomarkers and elucidation of pathological conditions. In this study, we analyzed and compared IgG4-ROD and MALT lymphoma by metabolomics, which has not been reported previously.

【Methods】 Six samples of orbital MALT lymphoma (mean age 62.3 years ; 4 males and 2 females) and 11 samples of IgG 4-ROD (mean age 64.8 years, 4 males and 7 females) were analyzed. Using liquid chromatography with time-of-flight mass spectrometry (LC/TOF-MS), lipid soluble metabolites were measured. Comparison was made using orbital adipose tissue of the same case as control. To eliminate the influence of individual differences, the two diseases were compared after determining the difference between the lesion and the control in each case.

【Results】 Compared with orbital adipose tissue of the same case, significant differences in expression of 174 metabolites were observed in IgG4-ROD and significant differences of 132 metabolites were found in MALT lymphoma. In the comparison between IgG4-ROD and MALT lymphoma, significant differences in expression were observed in 12 metabolites. Principal component analysis confirmed that it was possible to differentiate among four groups : adipose tissue, tumor tissue, IgG4-ROD, and MALT lymphoma.

【Conclusion】 Metabolomics may be useful for the differentiation of lymphoproliferative diseases in the orbit and may lead to elucidation of the pathogenesis of these diseases.

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LONG TERM CLINICOPATHOLOGICAL OUTCOME OF ENDOSCOPIC RESECTION FOR PEDUNCULATED TYPE EARLY INVASIVE COLORECTAL CANCER

(社会人大学院博士課程2年消化器内科学)

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【INTRODUCTION】 Despite the fact that the criteria is still not clear for additional surgery in pedunculated type invasive colorectal cancer treated endoscopically, only few long term studies have been done. Submucosal invasion limited to <1,000 μm , without lymphovascular invasion, poorly differentiated component and tumor budding is said to be a good candidate for endoscopic resection. This study was conducted to determine outcomes for pedunculated type early invasive cancer patient treated with endoscopy.

【METHODS】 The study was carried out in a single center. We retrospectively reviewed the medical records of patient with pedunculated type early invasive cancer who underwent endoscopic procedure between October 1998 and October 2018. We examined pathological factors of each case, lymph node metastasis and recurrence from applicable cases.

【RESULTS】 A total of 158 patients, 160 pedunculated type early invasive colorectal cancer were enrolled in this study. The study population include 122 men and 38 women with a mean age of 71 ± 12 years. The mean tumor size was 17 ± 6.7 mm, and the location was as follows ; S/D/T/A : 135/10/6/5. As for the growth pattern, PG/NPG : 146 (91.2%) /14 (8.6%). Histopathologically, 138 (86.9%) tumors were well-differentiated and 22 (13.8%) were moderately differentiated adenocarcinoma. The mean SM invasion depth was $2,130 \pm 1,618$ μm . Among them 106 (66.3%) lesions

were diagnosed as head invasion and 54 (33.8%) were diagnosed as stalk invasion. There were 23 (14.3%), 17 (10.6%) and 24 (15%) positive case of lymphatic invasion, venous invasion and with poorly differentiated component, respectively. In 18 (12%) cases, budding was seen and there were 3 cases which the budding grade was over 2. Of all cases, 59 cases received additional surgical colectomy along with lymph node dissection. Among the lesions treated surgically, the overall incidence of lymph node metastasis was one (1.7%). 65 cases were followed up more than one year and was available for recurrence analysis. Among them 43 cases had endoscopic resection alone and 22 cases had endoscopic resection followed by surgical operation. There was no local recurrence seen in any of the cases. Average follow up period was 5.2 years. Including the additional surgery cases, the incidence of lymph node metastasis was low as 1.7%. There were some head invasion cases which didn't undergo additional surgery even though the invasion depth met the criteria. None of these cases revealed recurrence.

【CONCLUSION】 We need to distinguish the additional resection criteria of pedunculated type carcinoma from non-pedunculated type carcinoma. There is a possibility that most pedunculated type early invasive colorectal cancers can be managed by endoscopic treatment alone. Further cases and long-term observation are needed.

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QUANTITATIVE NUCLEAR FEATURES OF HEMATOXYLIN-EOSIN SPECIMENS FROM INITIAL TRANSURETHRAL RESECTION FOR PREDICTING NON-MUSCLE INVASIVE BLADDER CANCER RECURRENCE

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【Introduction and Objective】 In non-muscle invasive bladder cancer, clinical management is often based on risk classification with limited subjective tools. Recent development in artificial intelligence and digital pathology has promoted the use of this technology in cancer diagnosis. Analysis of digitalized hematoxylin-eosin (HE) tissue section images contributes to quantitative evaluation of cancer lesion morphology. We aimed to develop a novel prediction model for intravesical recurrence based on computer measured nuclear morphological features in non-muscle invasive bladder cancer cases.

【Methods】 We investigated 30 patients diagnosed with non-muscle invasive bladder cancer. A pathologist annotated digitalized HE tissue slides for bladder cancer. Nuclei were segmented from the annotated region of interest (ROI). Following imaging processing techniques, we assessed 992 nuclear morphological features from each nucleus e.g., nucleus size, roundness, contour length, intra-nucleus texture data. To identify specific features that were useful for intravesical recurrence prediction, a multiclass stepwise discriminant analysis was done. We performed canonical discriminant analysis to obtain recurrence probability for each patient. We also applied the machine learning method, support vector machine (SVM), to 24 cases; we validated the model by testing 6 cases.

【Results】 From the digitalized HE tissue slide images,