AT-42. FACTORS ASSOCIATED WITH MALIGNANT TRANSFORMATION OF LOW-GRADE GLIOMA
Keisuke Moriya1, Masayuki Nitta1,2, Takashi Maruyama1,2, Taichi Saito1,2, Shoko Ikuta2, Yoshikazu Okada1, Hiroshi Iseki2, and Yoshihiro Muragaki1,2; 1Tokyo Women’s Medical University, Tokyo, Japan; 2Facility of Advanced Techo-Surgery, Tokyo, Japan

BACKGROUND: There is no standard therapeutic regimen for low-grade glioma (LGG). We have suggested extent of resection (EOR) was strongly associated with prognosis of LGG. About half of LGG eventually show malignant transformation (MT), MT is an important factor in determining prognosis of LGG. Therefore, it is important to define factors associated with MT. In this study, we investigated correlation between MT and genetic profile and adjuvant therapy in LGG. METHOD: 151 patients (Male: Female = 80:71) with LGG treated in our institute from 2000 to 2010 were retrospectively analyzed. Median follow-up period was 41 months, follow-up ratio was 96%, and the average age was 39.1 year-old (15-65). Diffuse astrocytoma (DA) accounted 47 patients (31%), oligodendroglioma (O) was 55 patients (37%), oligoastrocytoma (OA) was 44 patients (29%). The median Mib-1 index was 4.8. IDH1 mutation and co-deletion of 1p19q locus were analyzed by immunohistochemistry and FISH method, respectively. RESULT: The average and median EOR of T2 high area was 85% and 95%, respectively. ACNU based chemotherapy was performed in 35 patients and radiotherapy in 48 patients. IDH1 mutation and 1p19q co-deletion were 75% and 57%, respectively. 48 patients out of 151 recurred and 29 patients were MT. Patients without IDH1 mutation (P = 0.025) or 1p19q deletion (P = 0.001) showed significant higher rate of MT. In analysis of all patients, EOR strongly correlated with MT (P = 0.0002). EOR correlated with MT in DA (P = 0.0003) but not in oligodendroglial subtypes (P = 0.7). In IDH1 mutant group, chemotherapy reduced MT (P = 0.004), however, in IDH1 wild-type group, both radiotherapy (P = 0.004) and chemotherapy (P = 0.006) brought higher incidence of MT. CONCLUSION: EOR significantly prevented MT in DA. It was suggested that IDH1 was a predictive factor for MT following radiotherapy and chemotherapy in LGG. Extensive resection is required for IDH1 wild type DA.