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Abstract

Children with a brain tumor treated with high-dose busulfan-thiotepa with autologous stem cell transplantation (ASCT) and radiation therapy (RT) often experience radiographic changes during follow-up. The purpose of the study was to identify the incidence, time course, risk factors, and clinical outcome of this complication. From May 1988 through May 2007, 110 patients (median age, 3.6 years; range, 1 month to 15.3 years) with a brain tumor had received 1 course of high-dose busulfan-thiotepa with stem cell rescue, followed or preceded by RT as part of their treatment. All MRI follow-up examinations were systematically reviewed. Twenty-three patients (21%) developed neuroradiological abnormalities at a median time of 9.2 months (range, 5.6-17.3 months) after ASCT. All contrast-enhancing lesions appeared in patients who had received RT after ASCT and were localized inside the 50-55Gy isodoses. They disappeared in 14 of 23 patients after a median time of 8 months (range, 3-17 months), leaving microcalcifications in some cases. The presence of MRI abnormalities was an independent prognostic factor for overall survival in the multivariate analysis (hazard ratio, 0.12; 95% confidence interval [CI], 0.04-0.33), with a 5-year overall survival rate of 84% among patients with MRI abnormalities (95% CI, 62-94), compared with 27% (95% CI, 19-37) among those without lesions. MRI-detectable pseudoprogression is a common early finding in children treated with high-dose busulfan-thiotepa followed by radiation therapy and is correlated with a better outcome.


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