Outcome and patterns of relapse in childhood parameningeal rhabdomyosarcoma treated with proton beam therapy

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Résumé

Purpose/Objective(s):
The standard of care of childhood parameningeal rhabdomyosarcoma (pRMS) is chemotherapy and local radiotherapy. Protons are increasingly being used in order to decrease late effects. The aim of the present study is to analyse the pattern of relapse and the correlation with dosimetric factors in pRMS treated with proton therapy (PT).
Methods and Materials:
This retrospective evaluation includes children treated in our institution for pRMS. Information on demographics, treatment, tumor characteristics, as well as toxicities and outcome was prospectively collected within the in-house registry. For patients presenting with local relapse, a fusion of the dosimetry with the magnetic-resonance imaging (MRI) displaying site and geometry of recurrence was performed.
Results:
Median follow-up time was 2.9 years (0.5-4.7). Forty-six patients were identified in our institution between July 2013 and November 2017. Main characteristics of patients were as follow: 56.5% male, median age 5.1 years (1.3-17.5), 39.1% alveolar histology, 26.1%, 52.2%, 8.7% and 13% patients with subgroup risk classification D, E/F/G, H or metastatic, respectively, median total prescribed dose 55.8 Gy (50.4-56.4). Estimated 2-year local control (LC), metastasis-free survival (MFS), event-free survival (EFS), and overall survival (OS) were 83.8, 87.8%, 76.9% and 88.9%, respectively. No acute or late local toxicity exceeding grade 3 was observed. Risk-group was identified as prognostic factor for MFS in univariate analysis but not in multivariate analysis (trend: p=0.09). In this cohort, dosimetric factors did not correlate with outcome. When matching local relapse MRI with dosimetry 66.6% of relapses occurred in the high dose volume, and 33.4% of patients in the intermediate/low dose volume respectively.

Conclusion:
PT was effective and well feasible even in a critical cohort. Still, local relapse within the

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target volume of the RT remains an important issue in pRMS and new treatment strategies are needed.

Mots-Clés: Protonthérapie, rhabdomyosarcome, pediatrie, survie