Reviewer’s report

Title: Impairment of intellectual functions after surgery and posterior fossa irradiation in children with ependymoma is related to age and neurologic complications

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Reviewer: Eirik Helseth

Reviewer’s report:

General
The study describes the neuropsychological outcome of children treated with surgery and posterior fossa irradiation for localized infratentorial ependymoma. The main conclusions are:
1. Children with posterior fossa ependymoma treated with surgery and localized infratentorial irradiation have moderate impairment of intellectual functions.
2. Negative prognostic markers with respect to intellectual functions were age <4-years at time of treatment, presence of cerebellar syndrome and hydrocephalus at time of presentation.
3. There was no trend for deterioration of intellectual functioning over time.
4. When comparing intellectual functioning in these children with published series of children with medulloblastoma treated with surgery and craniospinal irradiation, it is obvious that the ependymoma patients in general have less intellectual impairment. The authors suggest that this difference can be attributed to the effect of localized infratentorial irradiation contra craniospinal irradiation.
5. Patients treated with conformal RT tended to have less cognitive impairment than patients treated with "opposite lateral beams".

This paper should be of interest to health care professionals involved in treatment of patients with pediatric brain tumors. In my opinion, the main message to the scientific community is that conformal RT of children with posterior fossa ependymoma can be given with acceptable side effects. This, as opposed, to the detrimental side effects seen in small children with medulloblastoma treated with craniospinal RT.

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

1. Important information about the patients on an individual basis are missing: Surgical complications, grade of resection (verified with postoperative MR), tumor status at time of cognitive testing (no tumor detectable, residual tumor, recurrent tumor), shunt or endoscopic third ventriculostomy, number of shunt failures and shunt infections. All these factors may influence cognitive function. This
information should be given in a table together with main cognitive scores. The reader will then be able to study each patient.

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

1. The observation period is in some of the patients too short for this kind of study, since the side effects of RT are expected to increase over time.

2. At the authors institution the standard treatment of posterior fossa ependymoma is surgery followed by RT. Personally, I am not convinced that all children with totally resected posterior fossa ependymoma should be referred to RT. So, in addition to discuss the optimal type of RT, the authors should also discuss if RT is necessary in all patients.

Discretionary Revisions (which the author can choose to ignore)

**What next?:** Accept after minor essential revisions

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interest.