



Localized intracranial germinoma: is it time to re-define target volume for whole ventricular irradiation?

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The treatment strategy for children with brain tumors has been to reduce the intensity of treatment by minimizing long-term toxicities, while preserving cure rates. In this context, localized intracranial germinoma is the best fit for this strategy, and attempts have been made over the last 30 years to reduce the dose and volume of radiotherapy. However, the definition of the target volume for radiotherapy is uncertain and complex and no formal guidelines exist, particularly for whole ventricular irradiation (WVI).

In this issue of *Radiation Oncology Journal*, the paper "Excluding prepontine cistern from whole ventricle radiotherapy target volume in localized germinoma" by Ryu and Lee [1] is very encouraging in a situation where evidence cannot be secured through systematic clinical trials. They reported that there was no relapse in the prepontine cistern and that endoscopic third ventriculostomy was not a significant prognostic factor. They further clarified that exclusion of the prepontine cistern resulted in significantly lower mean doses to the brainstem and cochleae, according to dosimetric comparisons.

Whenever pediatric radiation oncologists define a target for WVI, the inclusion of the prepontine cistern is always a matter of concern. In general, the prepontine cistern is included within the radiation volume only when a third ventriculostomy is performed. Mailhot et al. [2] surveyed the structural inclusion and definition of whole ventricle volume and found that more than 50% of pediatric radiation oncologists did not include the prepontine cistern for WVI. Only 33% favored including the prepontine cistern, and only for a third ventriculostomy. According to the Children's Oncology Group contouring atlas for WVI [3], the inclusion of the prepontine cistern is optional, but should be considered for patients who have undergone a third ventriculostomy and for those with large suprasellar tumors. In this light, the study by Ryu and Lee [1] represents a valuable addition to the understanding of whole ventricle volume.

With de-intensifying radiotherapy, such as the substitution of WVI for whole-brain irradiation, a significant volume of normal brain tissue can be spared and a decrease is expected in late treatment morbidities [4]. In addition, WVI, which applies to localized intracranial germinoma, has been reported with satisfactory results [5-7]. However, we know that there is room for further reduction of late complications by excluding the hippocampi or temporal lobes from WVI, and more research is needed in the future to identify an eligible subset of germinoma patients. These efforts will play an important role in preserving various aspects of memory and emotional learning in young patients.

Even very low doses of radiation that are considered safe can potentially cause secondary cancer, and the "as low as reasonably achievable" concept should be followed in the treatment of pediatric

brain tumors. Therefore, in addition to de-intensifying the radiation dose and volume by virtue of randomized trials, more attention should be paid to developing a radiation treatment methodology based on rich clinical experience, such as the study by Ryu and Lee [1]. This will provide confidence to pediatric radiation oncologists in their efforts to decrease late complications while preserving cure rates.

Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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