Reviewer's report

Title: Diffuse Cavernous Hemangioma of the skull misdiagnosed as skull metastasis in breast cancer patient: one case report and literature review

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Reviewer: Isaac Chen

Reviewer's report:

The authors present a single case of a primary intraosseous cavernous hemangioma (PICH) in a patient with prior breast cancer. The patient developed a mass on the right side of the head that was initially painless. However, it was initially associated with headaches and bilateral upper eyelid edema. Imaging showed an extensive lesion affecting the bilateral frontal and right temporal/parietal skull. There was also evidence of intracranial extension causing mass effect and cerebral edema. After a biopsy was performed, the diagnosis of PICH was obtained, and the patient was treated with radiation. This led to (presumably) a decrease in the size of the lesion and improvement in symptoms.

Comments:

- This an interesting case with very evocative imaging findings. However, it is very difficult to read in its current format. The manuscript would benefit from extensive proofreading to improve its grammar, spelling, and syntax.

- What is etiology of the patient's eyelid edema? Is this an inflammatory response to the PICH?

- The physical examination description should include a full neurological exam.

- The CT shows areas of the skull where bone signal is nearly completely gone. Were these areas of the skull soft on physical exam?

- In Figure 1, it appears that the lesion extends to the orbital roof. Inclusion of lower cuts would be helpful to see the extent of the lesion in the orbital/maxillofacial bones.

- What type of biopsy was performed? Open versus needle core?
- Given the extensive nature of the lesion, it seems likely that the radiation field was quite extensive, perhaps even approaching whole brain radiation. Inclusion of the radiation plan would be helpful.

- The authors state that "the head CT showed that the area of the biopsy area (right temporoparietal area) was reduced" at the end of radiotherapy. Does this mean that the PICH had decreased in size at the time of the last fraction? If so, this imaging should be shown as another figure. Also, imaging at the time of subsequent follow-up should also be shown to document decrease in the size of the PICH, decreased cerebral edema, and less brain shift, which the authors imply happened.

- In the Discussion, the authors state "The hemangiomas in skull always present as a single mass, multiple lesions is rare." This statement is inherently contradictory. If rare multiple lesions exist, then skull hemangioma are NOT always present as a single mass.

- In the Discussion, the authors state that "extensive cranial hemangioma has not been reported previously." How is "extensive" defined? Is this qualitative or quantitative? Has this term been used or defined in prior literature?

- Given the cerebral edema, was the patient treated with steroids (e.g., dexamethasone)? If so, were the steroids able to be weaned after radiation?

- If the patient did not have recurrence of her breast cancer, what was the reason why her serum tumor markers were elevated. Are the authors implying that PICH can lead to elevations in tumor markers? If so, this should be discussed more.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

No

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Unable to assess

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

Yes
Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

Not relevant to this manuscript

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Please indicate the quality of language in the manuscript:

Not suitable for publication unless extensively edited

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