Short Illustrated Review

Spinal metastasis from cranial meningeal hemangiopericytomas


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Summary

Spine metastasis from cranial meningeal hemangiopericytomas are extremely rare, with five surgically verified cases. We describe a case of a 55-year-old female diagnosed with metastatic hemangiopericytoma to the cervical spine 78 months after the first operation. Because of the long latency period, aggressive spinal surveillance should be advocated along with repeated bone scintigraphy and MRI.

Keywords: Hemangiopericytoma; metastasis to the spine; cervical.

Introduction

Spinal metastasis from cranial meningeal hemangiopericytomas are extremely rare. We report a case of secondary metastatic hemangiopericytoma to C6 and C7 which was detected 78 months after the first operation of a meningeal hemangiopericytoma in the right middle cranial fossa.

Literature review

We used MEDLINE searches to identify as many prior cases of spinal metastasis from cranial meningeal hemangiopericytomas as possible. The key words “hemangiopericytoma”, “metastasis”, “spine”, and “surgery” were searched and cross-referenced. Nine English-language articles were found in which secondary osseous hemangiopericytoma to the spine were detailed [8], and only four cases were metastatic from cranial hemangiopericytoma [3, 5, 6, 8].

Analysis

Kruse [3] was the first to report a metastatic hemangiopericytoma to the spine. Since then, 9 cases have been reported, of whom 5 cases were metastatic from cranial meningeal hemangiopericytomas, 3 cases from the lung, and 1 case from the heart. Among the 5 metastatic hemangiopericytomas from the brain, three metastases occurred in the cervical spine, three in the thoracic spine, and three in the lumbar spine (Table 1) [8]. Back or neck pain alone or pain accompanied by weakness or paresthesia are common clinical presentations, as in the case of other spinal extradural masses.

Illustrative case

A 55-year-old woman presented with a 5-month history of pain in her neck and tingling sensations in her left arm. The neurological examination on admission revealed decreased response to pin prick and light touch between the C6 to T1 dermatomes. Motor strength was reduced in the left arm (grade 2–3), with particular weakness of the intrinsic muscles of the left hand. The patient had a history of a hemangiopericytoma in the right middle cranial fossa which had been removed surgically 78 months earlier (Fig. 1), followed by postoperative radiotherapy. Follow-up brain MRI during the 6 year period after removal showed no local recurrence and the remaining tumor had been under control. Technetium-99m bone scintigraphy performed 1 year before admission showed no abnormal uptake of radio-isotopes in the spine. Magnetic resonance imaging (MRI) revealed a large intraspinal and extraspinal mass extending from C6 to T1 and destruction of the C6 and C7 vertebral bodies with compression of the spinal cord (Fig. 2).

After removal of the extraspinal mass, C6 and C7 corpectomy was performed. En block resection was not feasible and the tumor portion extending far laterally was left. The spine was stabilized from C5 to T1 by Ham’s cage with autograft and cervical plate. The tumor was histologically verified as being a metastatic hemangiopericytoma, which was identical to that of the previous cranial tumor specimen (Fig. 3). The postoperative course was uneventful with complete disappearance of radiating pain. Adjuvant radiotherapy was given to treat the residual mass. 8 months later, the patient suffered from right leg sciatica and progressed to paraparesis, but her family refused any further treatment.
Intracranial meningeal hemangiopericytomas are rare and account for less than 1% of all central nervous system tumors [1]. They are very aggressive tumors that tend to recur locally or distantly in the neural axis or in the form of extraneural distant metastases. Mena et al. [4] reviewed 94 central nervous system hemangiopericytoma and reported a 60% local recurrence and a 23% rate of metastasis. There is a relatively long latency period between the diagnosis of the primary hemangiopericytoma and the diagnosis of spinal metastasis, with an average interval of 63 to 107 months [1, 2, 7]. In our case, a spinal metastasis was detected after a 78 month progression-free interval. Many authors have emphasized the need for long-term follow-up monitoring, because of the possibility of delayed recurrence [2, 7].

Gross total removal followed by adjuvant radiotherapy is thought to constitute the best treatment, in order to reduce the risk of recurrence and increase the survival rate.

As the local control of meningeal hemangiopericytoma improves, spinal metastasis is likely to become a more common problem. Extraneural metastasis can occur at a different location with a different latency period which can be as much as several years, even though the primary lesion has been well controlled. Spinal metastasis should be kept in mind when a patient with adequately treated meningeal hemangiopericytoma presents with back or neck pain or pain accompanied by weakness. Once symptomatic spinal metastases are diagnosed, there is no satisfactory treatment modality to stop their fast and fatal progression, and prognosis is very poor. Therefore, patients

Table 1. Reported cases of metastatic hemangiopericytoma to the spine from cranial meningeal hemangiopericytomas

<table>
<thead>
<tr>
<th>Authors &amp; year</th>
<th>Age(yrs)/sex</th>
<th>Time interval(yrs)</th>
<th>Location of primary hemangiopericytoma</th>
<th>Location of metastatic tumor to the spine</th>
<th>Treatment</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kruse, 1961</td>
<td>22/F</td>
<td>8</td>
<td>frontoparietal</td>
<td>lumbar vertebra</td>
<td>surgery</td>
<td>not stated</td>
</tr>
<tr>
<td>Scott et al., 1974</td>
<td>38/M</td>
<td>16</td>
<td>posterior cranial fossa</td>
<td>T12/L1</td>
<td>surgery and radiotherapy</td>
<td>improvement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>19</td>
<td></td>
<td>upper cervical</td>
<td>surgery</td>
<td>death after complication</td>
</tr>
<tr>
<td>Nonaka et al., 1998</td>
<td>49/F</td>
<td>9.5</td>
<td>tentorium</td>
<td>T8</td>
<td>surgery and radiotherapy</td>
<td>good recovery</td>
</tr>
<tr>
<td>Woitzik et al., 2003</td>
<td>40/F</td>
<td>8</td>
<td>frontal</td>
<td>C6–T2</td>
<td>surgery and radiotherapy</td>
<td>good recovery</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9</td>
<td></td>
<td>L2</td>
<td>radiotherapy</td>
<td>not stated</td>
</tr>
<tr>
<td>Present case</td>
<td>48/F</td>
<td>6.5</td>
<td>middle cranial fossa</td>
<td>C6–C7</td>
<td>surgery and radiotherapy</td>
<td>improvement</td>
</tr>
</tbody>
</table>

Fig. 1. Axial (A) and sagittal (B) T1-weighted MRI image with gadolinium administration revealing a well-enhanced meningeal hemangiopericytoma in the right middle cranial fossa with extension to the cerebellopontine cistern