HIGHLIGHTS

Generally speaking!

Anterior segment imaging in glaucoma: An updated review

Effect of fluidics on corneal endothelial cell density, central corneal thickness, and central macular thickness after phacoemulsification with torsional ultrasound

Free full text at www.ijo.in
Metastatic adenocarcinoma of the cervix presenting as a choroidal mass: A case report and review of literature of cervical metastases to the eye

Akshay Gopinathan Nair1,2,3, Haresh T Asnani1,3, Vinod C Mehta4, Siddharth V Mehta4, Rima S Pathak4

Cervical cancer is the most common cancer among females in India. Cervical cancer usually spreads by local extension and through the lymphatic drainage to the lymph nodes. Hematogenous spread, the mechanism responsible for distant metastases, is rarely seen in cervical malignancies. In this communication, we report a case of a 45-year-old woman who presented with unilateral decrease in vision of 3 months duration. She was found to have a serous retinal detachment with underlying diffuse, subretinal yellowish-cream colored infiltrates in the right eye, suspicious of choroidal metastases. Systemic evaluation showed disseminated systemic metastases arising from a primary adenocarcinoma of the cervix. In this communication, we review all the documented cases of metastases to the eye and adnexa arising from cervical cancer and their clinical characteristics. Unilateral choroidal metastasis arising from an adenocarcinoma of the cervix is extremely rare with only one previous documented case. Although uncommon, choroidal metastasis may be the presenting feature of primary cervical malignancy. Furthermore, cervical malignancy must be ruled out in women who present with orbital or choroidal metastases arising from an unknown primary.

Key words: Adenocarcinoma, cervix cancer, choroidal metastasis, granuloma, metastases, metastatic cervical cancer, orbital metastasis

The most common malignancy in women worldwide is breast cancer, followed by cervical cancer. However, cervical cancer is the most common cancer in Indian women. Cervical cancer commonly spreads by local extension and also through the lymphatic drainage to the retroperitoneal lymph nodes.
Hematogenous spread, which is the mechanism responsible for distant metastases, is rare and is seen in only 12% of the cases of cervical malignancies with the typical sites being liver, lung, and bone.13 Eye metastases from cervical cancer are extremely rare but are known to occur; the orbit, extraocular muscles, choroid, iris and the subconjunctival tissue being the reported sites of metastatic lesions.14 Here, we describe the case of a 45-year-old female in whom a unilateral choroidal metastasis was the presenting feature of disseminated adenocarcinoma of the cervix. We also review the available literature on ocular and adnexal metastasis.

Case Report

A 45-year-old lady presented with complaints of diminished vision for distance and near in the right eye for the past 3 months. She had no other ocular complaints. On examination, the best-corrected visual acuity was counting fingers at 2 m in the right eye and 20/20 N6 in the left eye. Anterior segment evaluation, intraocular pressures, and ocular motility were normal in both eyes. No proptosis was noted. Right eye fundus showed a serous retinal detachment with underlying diffuse, subretinal yellowish-cream colored infiltrates whereas the left eye was normal [Fig. 1a]. The infiltrates were largely situated on and around the posterior pole with the periphery being uninvolved. The vitreous cavity was clear with no signs of inflammation. Fundus fluorescein angiography showed hypofluorescence during the arterial phase and progressive hyperfluorescence during the subsequent phase. Pin-point discrete leakages were seen from the multiple lesions in the late phase along with disc leakage [Fig. 1b].

A clinical diagnosis of choroidal metastasis was made, and a detailed systemic history was elicited in order to localize a primary tumor. Her systemic history was significant: She gave a history of frequent headaches and a 6-month history of menorrhagia. A metastatic screening of ultrasound of the abdomen, liver function tests, serum lactate dehydrogenase, and a gynecological consult were requested. Gynecological examination revealed an ulcerative mass arising from the cervix measuring approximately 4 cm × 4 cm × 3.5 cm, which bled on touch. A biopsy of the mass was performed which confirmed the diagnosis of poorly differentiated adenocarcinoma of the cervix with perivascular and perineural invasion. High resolution computed tomography (CT) scans of the chest showed multiple pleuroparenchymal metastatic nodules [Fig. 2a and b]. Positron emission tomography CT–(PET-CT) scan was performed which showed a bulky uterine cervix with increased metabolic activity. Multiple, hypermetabolic enhancing right supraclavicular, retropectoral, and mediastinal lymph nodes were noted. Multiple, hypermetabolic pleuroparenchymal lung nodules were also seen [Fig. 2c]. Hypermetabolic erosive lesions were seen involving the left parietal skull and a hypermetabolic lytic lesion seen in the subtrochanteric shaft of the left femur. A diagnosis of the International Federation of Gynecology and Obstetrics (FIGO) Stage IVb (American Joint Committee on Cancer staging–T3a N1 M1) adenocarcinoma of the cervix was made. In view of disseminated metastasis, she was advised for palliative chemotherapy and whole body radiation. She, however, declined treatment and succumbed to respiratory complications 2 months after diagnosis.

Discussion

A database search was performed on PubMed for ophthalmic metastasis of cervical cancer using the relevant search phrases. All relevant English language articles were extracted, with reference lists of the articles reviewed for applicable articles. In cases of non-English language articles, if the abstract was translated into English, the article was referenced as (abstract only) in the citation.

Bloch and Gartner, who had described metastasis to the eye and orbit from various primary tumors, reported a single case of metastatic cervical cancer. However, the details of the case, the precise site of the lesion, laterality, histopathological subtype, treatment, and outcome were not specified.13

![Figure 1](image1.png)

**Figure 1:** (a) Fundus photograph of the right eye showing serous retinal detachment with underlying choroidal, diffuse, yellowish-cream colored infiltrates. (b) Composite image of the fluorescein angiogram in the late phase demonstrating hyperfluorescence along with pin-point discrete leakages from the choroidal masses

![Figure 2](image2.png)

**Figure 2:** Axial (a) and coronal (b) slices of high-resolution computed tomography images of the chest demonstrate multiple bilateral randomly distributed metastatic nodules of varying sizes. (c) A positron emission tomography image showing hyper metabolic spots in the lungs, right supraclavicular lymph node and brain suggesting disseminated metastases
Table 1: The salient findings of available reports of cervical cancer with ocular and adnexal metastases

<table>
<thead>
<tr>
<th>Author/year of publication</th>
<th>Age</th>
<th>OD/OS</th>
<th>Vision</th>
<th>Presenting symptoms</th>
<th>Location of metastasis</th>
<th>Primary tumor subtype</th>
<th>Staging of tumor prior to diagnosis of ocular metastases*</th>
<th>Other sites of metastases</th>
<th>Was ocular metastases the presenting feature of cervical cancer?</th>
<th>Treatment</th>
<th>Final outcome</th>
<th>Duration between diagnosis of ocular metastasis and death</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hertzanu et al./1987</td>
<td>44</td>
<td>OD</td>
<td>NA</td>
<td>Proptosis, diplopia, blindness</td>
<td>Orbit (intracanal + extraconal mass)</td>
<td>Squamous cell carcinoma - Cervix</td>
<td>PU</td>
<td>None</td>
<td>Yes</td>
<td>Chemotherapy</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Kurosawa et al./1987</td>
<td>54</td>
<td>OD</td>
<td>20/100</td>
<td>Reduced vision, pain</td>
<td>Iris</td>
<td>Squamous cell carcinoma - Cervix</td>
<td>IV B</td>
<td>Lung</td>
<td>No</td>
<td>Radiation</td>
<td>DOD</td>
<td>NA</td>
</tr>
<tr>
<td>Wiegell et al./1995</td>
<td>25</td>
<td>OS</td>
<td>NA</td>
<td>Proptosis</td>
<td>Choroid</td>
<td>Adenocarcinoma - Cervix</td>
<td>I B</td>
<td>Lung</td>
<td>No</td>
<td>Chemotherapy, NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Ortiz et al./1995</td>
<td>28</td>
<td>OD</td>
<td>20/20</td>
<td>Proptosis</td>
<td>Conjunctival mass</td>
<td>Squamous cell carcinoma - Cervix</td>
<td>IV B</td>
<td>Lung</td>
<td>No</td>
<td>Chemotherapy</td>
<td>DOD</td>
<td>4 months</td>
</tr>
<tr>
<td>Lee et al./1997</td>
<td>46</td>
<td>OS</td>
<td>20/80</td>
<td>Proptosis</td>
<td>Orbit (lateral orbital wall)</td>
<td>Squamous cell carcinoma - Cervix</td>
<td>II B</td>
<td>None</td>
<td>No</td>
<td>Radiation</td>
<td>DOD</td>
<td>4 months</td>
</tr>
<tr>
<td>Inoue et al./2000</td>
<td>55</td>
<td>OU</td>
<td>20/20</td>
<td>Reduced vision</td>
<td>Choroid - both eyes</td>
<td>Squamous cell carcinoma - Cervix</td>
<td>III B</td>
<td>Lung, cerebellum</td>
<td>No</td>
<td>Chemotherapy, DOD</td>
<td>Radiation</td>
<td>3 months</td>
</tr>
<tr>
<td>McCulley et al./2002</td>
<td>29</td>
<td>OD</td>
<td>20/20</td>
<td>Proptosis, diplopia</td>
<td>Orbit (intracanal mass)</td>
<td>Subtype not known/ presumed cervical</td>
<td>NA</td>
<td>Left femur, spine, liver</td>
<td>No</td>
<td>Chemotherapy, DOD</td>
<td>Radiation</td>
<td>NA</td>
</tr>
<tr>
<td>Park et al./2005</td>
<td>57</td>
<td>OD</td>
<td>NPL</td>
<td>Proptosis, blindness</td>
<td>Orbit (intracanal mass)</td>
<td>Adenocarcinoma/ cervical origin confirmed by HPV typing</td>
<td>I B</td>
<td>Supraclavicular, submandibular nodes</td>
<td>No</td>
<td>Chemotherapy, DOD</td>
<td>Radiation</td>
<td>NA</td>
</tr>
<tr>
<td>Gosslee et al./2009</td>
<td>36</td>
<td>OS</td>
<td>20/30</td>
<td>Ptosis, swelling, pain</td>
<td>Orbit (superolateral orbital wall)</td>
<td>Squamous Cell Carcinoma - Cervix</td>
<td>II B</td>
<td>Right supraclavicular lymph node</td>
<td>No</td>
<td>Chemotherapy, DOD</td>
<td>Radiation, surgery</td>
<td>3 months</td>
</tr>
<tr>
<td>Singh et al./2009</td>
<td>50</td>
<td>OS</td>
<td>20/80</td>
<td>Diplopia</td>
<td>Orbit (medial orbital wall, medial canthus)</td>
<td>Squamous cell carcinoma - Cervix</td>
<td>PU</td>
<td>None</td>
<td>Yes</td>
<td>Chemotherapy, NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Sareen et al./2012</td>
<td>59</td>
<td>OS</td>
<td>20/20</td>
<td>Proptosis, epiphora, headache</td>
<td>Orbit (left lateral rectus)</td>
<td>Squamous cell carcinoma - Cervix</td>
<td>III A</td>
<td>Lung, liver, adrenals, bone, and scalp</td>
<td>No</td>
<td>Radiation</td>
<td>DOD</td>
<td>4 months</td>
</tr>
<tr>
<td>Shibeeb et al./2014</td>
<td>52</td>
<td>OU</td>
<td>CF at 1 m</td>
<td>Reduced vision</td>
<td>Choroid - Both eyes</td>
<td>Squamous cell carcinoma - Cervix</td>
<td>PU</td>
<td>Liver, bone</td>
<td>Yes</td>
<td>Radiation</td>
<td>DOD</td>
<td>3 months</td>
</tr>
<tr>
<td>Current case</td>
<td>45</td>
<td>OD</td>
<td>CF at 1 m</td>
<td>Reduced vision</td>
<td>Choroid</td>
<td>Adenocarcinoma- Cervix</td>
<td>PU</td>
<td>Lung, supraclavicular nodes, bones</td>
<td>Yes</td>
<td>None</td>
<td>DOD</td>
<td>2 months</td>
</tr>
</tbody>
</table>

*If staging was not mentioned, it was arrived at on the basis of the described clinical picture. The cases reported by Bloch and Gartner, and Ferry and Font have not been included in this table and subsequent analysis since details of those cases were not available. NA: Not available, OD: Oculus dexter (right eye), OS: Oculus sinister (left eye), NPL: No perception of light, DOD: Died of disease, PU: Previously undiagnosed, HPV: Human papillomavirus
Similarly, Ferry and Font, too in their series of 227 cases of ophthalmic metastasis, have reported that 4 cases of orbital metastasis in which the primary tumor was not identified could be cervical in origin.[16]

In literature, 12 cases of documented cervical cancer metastasizing to the eye have been reported; our case being the 13th.[1,4-14] The most common site for eye metastases was the orbit—it was seen in 53.84% (7/13) cases. This was closely followed by the choroid in 30.76% (4/13) cases; although 1 case had bilateral choroidal involvement.[9] It is unusual that the orbit was involved in more cases as compared to the choroid. The choroid represents a high flow vasculature system—where metastatic cells that have been disseminated from tumors elsewhere in the body can find a suitable and receptive environment for growth.[16,17] Therefore, choroidal metastasis is the most common intraocular tumour found among adults.[17] In addition, uveal metastases outnumber orbital metastases by a ratio of 8 to 1.[18] Iris and subconjunctival metastases from cervical primary were reported in 1 case each (7.69%).[15]

The outcome of metastatic cervical cancer is regarded to be poor.[19] The mean survival period after diagnosis of ocular and/or adnexal metastases from cervical cancer in those cases where data was available, was 3.28 months (range: 2–4 months; n = 7) indicating that metastasis to the eye usually foreshadow an ominous clinical course. This is lesser than 9–10 months that is, the reported average survival after diagnosis with uveal metastasis and 12–18 months in orbital metastasis in general.[18,20] Among all documented cases of cervical metastases to the eye, lungs were the most common site of concurrent metastatic lesion with 46.15% (6/13) of the cases; followed by skeletal lesions which was seen in 30.76% (4/13) cases. Only in 3 cases, it was noted that ocular metastasis was the only metastatic lesion present. However, in these cases; details of the standard metastatic screening protocols and findings of PET-CT have not been mentioned. Therefore, it is possible that other metastatic sites could have been missed. In 4 cases including ours, the metastases caused visual complaints that prompted them to seek medical advice; and eventually led to the diagnosis of cervical cancer. It must be noted that these numbers are too few to indicate a predictable pattern. In a review of patients dying from malignancy, 8% displayed choroidal metastases on autopsy.[15] Given the high number of cervical cancer cases, it is entirely plausible that choroidal metastases due to cervical malignancies are under-reported. The details of all available cases of documented ocular and adnexal metastasis arising from cervical primary malignancy are summarized in Table 1.

Treatment in cases of metastatic cervical cancer is largely palliative. Most systemic chemotherapy regimes are cisplatin-based.[18] Local radiation to sites harboring metastasis helps to alleviate pain due to skeletal metastases. Palliative radiotherapy is administered as larger fractions over shorter periods of time than conventional radical courses of treatment to maximize benefit.[21]

Summary

Ocular metastasis occurs late in the natural history of cervical cancer and often heralds a rapid downhill course. Our case possibly represents one end of the spectrum: That of extremely delayed presentation with disseminated metastasis. Although rare, choroidal metastasis may be the presenting feature of primary cervical malignancy. Furthermore, cervical malignancy must be ruled out in women who present with orbital or choroidal metastases arising from an unknown primary.[12] Literature shows that nearly a quarter of patients with orbital metastases develop ocular symptoms before the diagnosis of primary neoplasm.[20] Therefore a high degree of suspicion and diagnostic skills are needed on the part of ophthalmologist while dealing with an ocular or adnexal metastasis of unknown primary as expedited diagnosis can have a profound impact on the outcome for the patient.[9]

Acknowledgments

The authors acknowledge the contributions of Sumeed S. Hoskote, MD, Critical Care Medicine, Mayo Clinic, Rochester, MN, USA, Veena R. Iyer, MD, Department of Radiodiagnosis, University of Minnesota, MN, USA and Aniruddha Agarwal, MD, Stanley M. Truhsen Eye Institute, University of Nebraska Medical Center, NE, USA.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

A 52-year-old male patient presented at our hospital with unilateral progressive unilateral proptosis since 2 years ago and vision loss in his left eye. His left eye VA was 2/10, and right eye vision was fine but about an hour later, patient developed sudden vision loss and became no light perception (NLP). He underwent tumor resection through inferior transconjunctival approach. The procedure was done without complication, and the early postoperative course was smooth. He complained of diplopia. Perimetry showed inferotemporal scotoma that involved central part. After 3 weeks, his VA improved to 4/10 and scotoma extension was decreased. An hour later after tumor removal, patient developed sudden vision loss and became NLP. For ruling out postoperation hemorrhage, surgical site was explored. We found a large central scotoma. His VA improved to 20/200 the day after the surgery, and he complained of diplopia. Perimetry showed orbital tumor, so the patient underwent surgery. About 2–3 h after surgery, we recommended ocular examination in all patients that undergo CRAO following orbital tumor has not been reported before. Imaging evaluations revealed central retinal artery occlusion (CRAO). The patient was treated immediately with ocular massage and anterior chamber paracentesis as well as systemic therapy with mannitol were done. After 30 min, the patient recovered perception to light and then hand motion. Two hours later, it was improved to 1 m counting finger. After 3 hours, he recovered sight of light and then hand motion and 2 h later, it was improved to 1 m counting finger.

**References**