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Case Report

Ophthalmology Section

Orbital Metastasis of Cervical Carcinoma – Case Report and Review of Literature

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ABSTRACT

The orbit is a frequent site of metastasis, particularly from the breast, prostate gland and the lung. Carcinoma of the cervix metastasizing to the orbit is rare. We report a 27-year-old woman with Stage II B cervical cancer who presented with progressive painless protrusion of the left eye of one month duration associated with diplopia. Histology of the orbital mass was similar to that of the cervical cancer and reported as squamous cell carcinoma. She received palliative radiation to the left orbit 30 Gy in 10 fractions along with chemotherapy (Paclitaxel and Carboplatin). This resulted in regression of the proptosis. We review published literature of cases of carcinoma of the uterine cervix with metastasis to the orbit.

Keywords: Proptosis, Radiotherapy, Uterine neoplasm

CASE REPORT

A 27-year-old woman (P2 L2) presented with bleeding per vagina for 9-months. On evaluation, she was diagnosed to have carcinoma cervix, Stage II B. She received external beam radiation therapy (50.4 Gy) in 28 fractions with concurrent weekly cisplatin (40mg/m2) chemotherapy followed by intracavitary low dose brachytherapy (35 Gy).

Two months later, she presented with rapidly progressive painless protrusion of the left eye over 1-month associated with diplopia in all directions of gaze and mild blurring of vision. Vision at presentation was 6/6 in both eyes. On examination, the right eye was within normal limits. There was proptosis of the 4-mm in the left eye with restricted ocular movements in all directions of gaze. Fundus examination showed a few internal limiting membrane folds at the macula. During this time, she was also noted to have an enlarged left supraclavicular node, a fine needle aspiration cytology (FNAC) of which also showed metastatic squamous cell carcinoma. A computed tomography (CT) scan of the orbit revealed a soft tissue density in the medial extraconal compartment of the left eye with extension superiorly, inferiorly and to the orbital apex with minimal intraconal extension [Table/Fig-1].

Biopsy from the orbital mass was consistent with metastatic poorly differentiated squamous cell carcinoma. The orbital tumour had a similar morphology as the biopsy from the cervix. The tumour cells were immunopositive for cytokeratin 5/6 and p63.

Three days following the biopsy she developed worsening of proptosis along with chemosis [Table/Fig-2]. She developed a relative afferent defect with worsening of vision. Subsequently she developed acute onset visual loss in the left eye to perception of light with projection of light inaccurate. The left eye fundus showed gross disc oedema, haemorrhages and a cilioretinal artery occlusion [Table/Fig-3].

She received palliative radiation therapy to the metastatic node and left orbit 30Gy in 10 fractions. Chemotherapy with Paclitaxel and Carboplatin was initiated at this time. At the time of follow up 12-months later, there was total regression of the proptosis [Table/Fig-4] and the vision was counting finger at ½ metre. There was persisting relative afferent pupillary defect and optic atrophy in the left eye [Table/Fig-5].

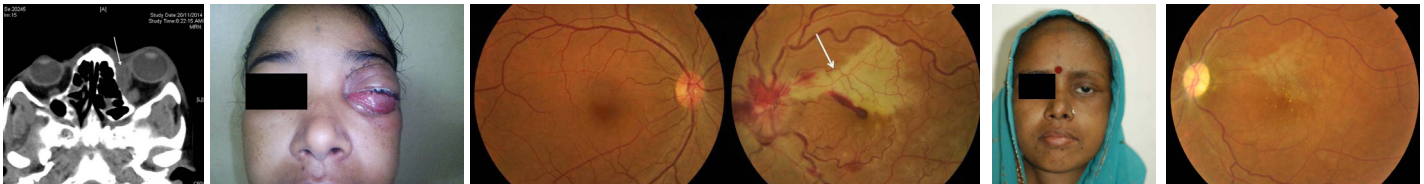
DISCUSSION

Tumours of the orbit may either originate primarily in the orbit or may be metastatic from distant primaries. Several tumours have been reported to metastasize to the orbit, the usual ones being breast, prostate gland, and lung [1].

Cervical carcinoma is a common malignancy encountered in clinical practice. Cervical carcinoma usually metastasizes to lymph nodes, bone, liver and lungs. Metastasis of cervical carcinoma to the orbit is infrequently reported although the incidence of cervical cancer is high, particularly in India. We highlight in this report, orbital metastasis from cervical cancer in a relatively young woman and also present a consolidated review of reported cases.

Orbital metastatic lesions are thought to be due to haematogenous spread of the malignancy. Orbital metastasis of cervical carcinoma is mainly noted in women of the reproductive age group of 29 to 46 years [2]. Patients generally present with complains of decreased vision, proptosis and restriction of ocular movements. The disease follows a rapid course with most patients losing vision in the eye eventually.

Possible explanations for the reduced vision include cilioretinal artery occlusion [3] and optic neuropathy secondary to the mass effect of the metastatic orbital lesion [4]. Cilioretinal artery occlusion is likely to be due to metastatic tumour cells causing occlusion of the arterial lumen, a phenomenon reported with other tumours [3]. Radiotherapy and chemotherapy are the available treatment options.



[Table/Fig-1]: Computed tomography (CT) scan showing a soft tissue density in the medial intraconal compartment of the left eye (arrow) with extension up to the orbital apex **[Table/Fig-2]:** Face photograph of the patient showing proptosis of the left eye along with chemosis **[Table/Fig-3]:** Fundus photograph of the left eye showing gross disc oedema, haemorrhages and a cilioretinal artery occlusion **[Table/Fig-4]:** Face photograph of the patient showing total regression of the proptosis **[Table/Fig-5]:** Fundus photograph of the left eye showing optic atrophy

No	Search term (s)	Number of articles
#1	Metastasis	268971
#2	#1 Limit to humans	228236
#3	Uterine cervical neoplasm	63452
#4	#3 Limit to humans	58094
#5	Orbit	30961
#6	#5 Limit to humans	20790
#7	# 2 AND # 4 AND #6	6*
8	Articles suitable for inclusion from PUBMED search	2
9	Additional articles identified by review of other articles	7
10	Total number of articles included for the review	9

[Table/Fig-6]: Search strategy used for identifying articles on orbital metastasis of uterine cervical neoplasms.
- pertains to PUBMED search; * three articles were excluded as they were not pertaining to the subject of interest (breast cancer with orbital metastasis – 1; retinopathy associated with cervical cancer – 1; orbital destruction by malignant tumour – 1; alveolar soft part cancer from cervix)

Though both modalities of treatment are effective to a certain extent, they are mainly administered as a means of palliation.

A PUBMED search was done between 1966 and July 2015 using the search terms "orbit," "uterine cervical neoplasm" and "metastasis" [Table/Fig-6]. Two suitable articles were identified through this search [4,5]. An additional 7 references were identified through review of relevant articles on this topic and search of GOOGLE [6-11]. Thus a total of 9 cases, including our case report were pooled and the data was analyzed [Table/Fig-7].

The mean (Standard deviation) age of the cohort of 9 patients was 43.0 (12.7) years. The duration of cancer at the time of diagnosis of orbital metastasis was 12.8 (10.9) months. The stage of tumour was variable in the reports with 2 patients with Stage I disease, 2 patients with Stage II disease, 1 patient with Stage III disease and 4 patients with Stage IV disease. In a majority (77.8%), the histology was squamous cell carcinoma while in one patient it was adenocarcinoma and in one other it was an undifferentiated cancer. Proptosis and diplopia were the presenting ocular symptoms in 62.5% and 37.5% respectively. The duration of eye symptoms was 2.2 (2.1) months. The metastatic lesion was variably located in the orbital rim (inferior=1; supraorbital=1; lateral=1), medial canthus (n=1), retroocular (n=1), retrobulbar (n=1) and medial extraconal (n=1). A majority of patients received radiation to the orbit (77.8%) in combination with local radiation to the cervix (50%) and adjunct chemotherapy (88.9%). Partial or complete response was seen in 55.6% of patients. In 3 patients, there was no response to treatment while in one report data was not presented. In those reporting survival, it was 3 to 4 months from the time of diagnosis of orbital metastasis.

Characteristic	Number
Number of case reports	9
Age (Mean ± SD) years	43.0 (12.7)
Location of metastasis (Right: left)	5: 4
Duration of disease (Mean ± SD) months†	12.8 (10.9)
Duration of eye symptoms* (Mean ± SD) months	2.2 (2.1)
Presenting symptom†	
Proptosis	5 (62.5%)
Diplopia	3 (37.5%)
Visual loss	2 (25%)
Swelling	1 (12.5%)
Stage of cervical tumour at the time of diagnosis	
Stage 1	2 (22.2%)
Stage 2	2 (22.2%)
Stage 3	1 (11.1%)
Stage 4	4 (44.4%)
Histology of the tumour	
Squamous cell carcinoma	7 (77.8%)
Undifferentiated cancer	1 (11.1%)
Adenocarcinoma	1 (11.1%)
Treatment given	
Radiation to orbit	7 (77.8%)
Chemotherapy	8 (88.9%)
Response to treatment (eye)	
Partial or complete response	5 (55.6%)
No response	3 (33.3%)
Data not available	1 (11.1%)

[Table/Fig-7]: Characteristics of patients with orbital metastasis from cervical cancer in the reported studies
* † Data available in 8 patients; data available in 7 patients

CONCLUSION

The orbit is not an uncommon site for metastatic tumours. Although cervical cancers do not appear to commonly metastasize to the orbit, this illustrative case and the other published cases reviewed in this article suggest that orbit may be a site for metastasis of uterine cervical neoplasms. The present case and other reports also suggest that treatment in the form of systemic chemotherapy and local orbital radiotherapy may result in partial or complete response in over half the patients. These treatments may thus be considered in orbital metastasis of uterine cervical neoplasms.

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