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Choroidal Metastasis as the Presenting Sign of a Primary Systemic Carcinoma: A Systematic Review

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Metastatic tumours of uvea are the most common intra-ocular malignancies in adults and choroid is the most common site for intra-ocular malignancies. The incidence of ocular metastases from lung cancer is reported to be 2-7%. Loss of visual acuity as a primary symptom in lung cancer is very rare. We present a review of literature of isolated case reports of patients who presented with diminution of vision and were later diagnosed to have carcinoma lung. This highlights the importance of subjecting a patient with choroidal metastasis without a known primary to systemic investigations as well as imaging, so as to prompt early recognition and therapy .

Keywords: Choroidal metastasis, Presenting symptom, Carcinoma

INTRODUCTION

Metastatic tumors of uvea are the most common intraocular malignancies in adults. Within the uvea, the choroid (88%) is the most commonly affected site followed by the iris (9%) and ciliary body (2%) [1]. Breast cancer seems to be the most frequent type of cancer giving intraocular metastases. The incidence for the breast cancer is reported to be 37-41%, while lung cancer is considered to be responsible for no more than 7% of choroidal metastases [2-4]. Among women, the common primary sites for choroidal metastasis are the breast, lung, gastrointestinal and pancreas, skin melanoma and other rare sources. Among men, however, the primary sites are the lung, unknown primary, gastrointestinal and pancreas, prostate, kidney, skin melanoma, and other rare sources [4-6]. Metastatic tumor of the eye presenting as the first sign of disseminated cancer is rare [7-9]. This article presents an overview of the studies which documented choroidal metastasis as the presenting symptom of carcinoma.

METHODOLOGY

A thorough review of literature was done in English language using the keywords "Choroidal metastasis", "presenting symptom", "carcinoma" using databases such as PUBMED, Google Scholar, Cochrane library and SCOPUS.

REVIEW OF LITERATURE

Das et al. [10] reported a case of adenocarcinoma of lung in a female patient, who presented initially with visual impairment as a result of choroidal metastasis and was treated with external beam radiotherapy for choroidal metastasis followed by palliative chemotherapy. The patient survived and had an improved vision and quality of life since the last twelve months of diagnosis.

Singh et al. [11] described 3 patients with non-squamous non-small cell lung cancer who presented with choroidal metastasis. Of the 3 patients, 2 each received Pemetrexed-Cisplatin (as first-line therapy), Gefitinib or Erlotinib (as second- or third-line therapy), and intravitreal Bevacizumab; and 1 patient received systemic Bevacizumab. Two patients had partial response radiologically with systemic treatment, and all 3 patients had regression of choroidal metastases with ocular treatment.

Bhattacharyya et al. [12] reported a case of a 54-year-old male patient presenting with diminution of vision and later was diagnosed as having small cell lung carcinoma. The patient received systemic chemotherapy as well as intravitreal Bevacizumab but the vision did not improve. The

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patient was later given external beam radiotherapy and showed subjective improvement in his ocular symptoms later on. Saha et al. [9] reported the case of a non-smoker, young male patient presenting with visual impairment due to bilateral retinal detachment as a result of choroidal metastasis. He also had metastasis to occipital lobe, liver and kidneys. Patient was treated with chemotherapy (regimen consists of Carboplatin and Paclitaxel) with intraocular radiotherapy.

In the case reported by Singh et al. [13], a 45 year old tobacco chewer, who presented with diminution of vision in left eye since 5 days, the left eye fundus showed a choroidal mass around 4 disc diameters in size starting at temporal margin of disc with overlying serous retinal detachment with macular involvement. Fundus fluorescein angiography showed a hyper-fluorescent non-vascularized mass temporal to disc with mottled appearance in left eye associated with overlying retinal detachment. Ultrasound B scan of left eye showed a plaque like hypo echoic area in posterolateral aspect of globe measuring 1.1 x 0.6 cm consistent with choroidal metastasis. Partial retinal detachment was seen superior to mass measuring 6 mm in length and 1.2 mm in thickness. MRI brain and orbit showed a well-defined homogenous lesion measuring 5 mm x 6 mm in left eye appearing hypo intense on T1, hyper intense on T2 and showing homogenous post contrast enhancement in left eye arising from choroid layer suggestive of choroidal metastasis. The occurrence of retinal detachments due to ocular metastasis is rare, [9] which is reported in this case. The successful gain of useful vision by the use of chemotherapy alone for choroidal metastases is also not frequently reported, which is noted in this case.

DISCUSSION

Metastatic cancer is the most common malignancy of the eye. The most commonly affected site is the choroid, most commonly the posterior pole. Diminution of vision due to choroidal metastasis as initial symptom of a primary carcinoma is very rare. A thorough review of the literature revealed only few cases of lung cancer patients suffering from choroidal metastasis as the first clinical sign. It is generally considered that the metastatic lesions occur at the final stages of the disease, where the mean survival is not expected to be more than 6 months and the majority of the patients already suffer from the typical lung cancer symptoms.

It is important to perform a thorough ophthalmological evaluation to make an early diagnosis. Metastatic tumors usually have a creamy yellow appearance. On fluorescein angiography, these lesions are usually hypo fluorescent in the early phases of study and become progressively hyper-fluorescent in the late phases [7]. B-scan ultrasound shows an echogenic sub-retinal mass with diffuse, ill-defined borders. Serous retinal detachment is common and sound attenuation in the lesion is usually moderate [8]. The differential diagnosis of choroidal metastasis includes choroidal melanoma, choroidal osteoma, choroidal hemangioma, choroidal neovascularization with disc form scar, posterior scleritis and other rare lesions, so choroidal metastasis may present a diagnostic challenge as well.

The currently available options for the management of ocular metastasis are observation, chemotherapy, photocoagulation, cryosurgery, surgical resection or radiotherapy. The chosen therapy depends on the clinical condition of the patient and the type of primary tumor. Ocular metastasis of non-small-cell lung carcinoma has been reported to respond well to systemic chemotherapy and intravitreal bevacizumab therapy [14-15]. Recently, epidermal growth factor receptor tyrosine kinase inhibitor (EGFR-TKi) has also been shown to be an effective treatment option for ocular metastasis of non-small cell lung cancer (NSCLC) harboring an EGFR mutation [16].

CONCLUSION

Often Ophthalmologists might be the first medical professionals to evaluate and hint a diagnosis to a potentially life threatening primary systemic malignancy, thus, meticulous ophthalmological evaluation is necessary. Also, around two-third-of-patients with choroidal metastasis of lung cancer are benefitted by treatment, thus stressing the need for early recognition and therapy to maximize a patient's quality of life.

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