Case Report

Bilateral Choroidal Metastasis from Non-Small Cell Lung Cancer

This report presents a patient with non-small cell lung cancer with recent complaints of blurry vision, greater in the right eye, with known extra-ocular sites of metastases. This report discusses the ocular presentation and treatment.

I. Case History

- Demographics: 63 year old white male
- Chief Complaint: Progressive vision loss for two to three weeks in both eyes. Three months ago, he noticed a small blurry spot in inferior nasal vision in the right eye that has slowly increased in size and blurriness over the past few months. Also reports an occasional white flash in the left eye a few months ago.
- Ocular History:
  - Last eye exam was five years ago.
  - Incidental finding of Pituitary mass with involvement of the pituitary infundibulum.
- Medical History:
  - Non-small cell lung cancer with metastasis to the liver, adrenals, and bone.
- Medications:
  - 40MG Megestrol acetate, 20MG Pantoprazole Na, 7.5MG/0.6ML inj Fondaparinux, 4MG Dexamethasone, Nutritional supplement ensure plus, 1MG Folic Acid, 8MG Ondansetron HCL, 10MG Prochlorperazine Maleate, 0.1MG Levothyroxine Na.

II. Pertinent findings

- Clinical
  - BCVA OD: 20/30-; OS: 20/20-; Near OU 20/20-
  - EOMs: Full
  - Pupils: PERRLA (-) APD
  - Hirschberg @ near Ortho OU
  - IOP: 10/10 mmHg OD/OS
  - Slit Lamp Examination: Inferior SPK OU
  - DFE OD:
    - Amelanotic lesions as described below:
      - 10x12DD, elevated in the macula and extending temporally, overlying pigment changes, no hemorrhages
      - 1DD, on nasal border of aforementioned lesion
      - 2.5DD, elevated, 3DD inferior to optic nerve head (ONH)
      - 1/4DD, 1DD superior to ONH
      - 2.5DD, elevated, 2.5DD superior-nasal to ONH
  - DFE OS:
    - Amelanotic lesions as described below
      - 3x2.5DD, elevated, pigment changes, 0.5DD inferior-nasal to ONH
• 2.5DD, 0.5DD superior to ONH
• 2DD, elevated, 2.5DD superior-temporal to ONH
• 3x4DD, elevated, pigment changes, 5 o’clock inferior-temporal

• Laboratory studies
  o HVF 24-2
    ▪ OD: unreliable, dense superior nasal and inferior nasal defect
    ▪ OS: unreliable, superior and inferior arcuate defects
  o Spectralis OCT
    ▪ OD: Elevated choroidal lesion involving temporal macula with subretinal fluid. There’s also evidence of disruption of overlying retinal layers.
  o Fundus Autofluorescence (FAF)
    ▪ OD: Focal areas of hypoautofluorescence surrounded by diffuse hyperautofluorescence
  o B-scan
    ▪ OD: 5.6 mm choroidal lesion. A-scan shows initial spike followed by decreased internal reflectivity.

• Radiology studies
  o CT of chest and PET scan showed mass in right lower lobe and multiple nodules in the lungs, abnormal lymphadenopathy, liver lesions, and bone abnormalities.
  o MRI of the Sella Tursica showed pituitary enlargement indicating pituitary neoplasm pressing on the optic chiasm, ICA, and cavernous venous sinuses.

III. Differential Diagnoses for Choroidal Mass

  o Choroidal melanomas are primarily unilateral elevated lesion with variable pigment. According to Ho AC et al. it is the most common primary ocular malignancy with the greatest prevalence in Caucasians\(^1\). B-scan shows that it is acoustically hollow. A-scan shows low reflectivity\(^1,2\).
  o Choroidal hemangioma is an orange-red to yellow lesion with well circumscribed or soft boarder. The lesion is elevated with subretinal fluid often causing a retinal detachment. Fluorescein angiography will hyperfluoresce\(^1\).
  o Intraocular lymphoma has bilateral multiple yellow-white lesion posterior to retina with a vitritis\(^1\).
  o Choroidal Osteoma’s are composted of bone tissue and thus has a yellow-white appearance. Typically unilateral and in young women\(^1\).
  o Choroidal neovascularization with disciform scar is a white fibrotic scar; elevation can be increased by subretinal fluid from choroidal neovascularization all can obscure vision.
  o Posterior Scleritis often has inflammatory signs and eye pain. The choroid is visible therefore so are vessels color can vary from black, choroid, to yellow-white\(^3\).
  o Choroidal Metastasis the most common intraocular malignancy. Appears in the posterior pole as a non-pigmented round lesion\(^1\). B-scan show the lesion is dense. A-scan is highly reflective\(^2\).

IV. Diagnosis and Discussion of Choroidal Metastasis
The patient presented with common symptoms of blurry vision that was correctable to 20/30- and 20/20-, OD and OS respectively, as well as a loss of visual field and flashes of light. Other symptoms of choroidal metastasis can include: pain, floaters, and conjunctival redness. Appearance is of a flat choroidal metastasis that is circular, yellow, amelanotic, lesion that may have lipofuscin in the posterior pole. Our patient presented with similar lesions. The patient also had a subretinal fluid and subretinal detachment, a less common appearance but a possible sequela of choroidal metastasis.

The patient had already been diagnosed with non-small cell lung cancer that metastasized to the liver, skeleton, pituitary, and lymph tissue. SU et al report 80% incidence of other extra-ocular metastasis when choroidal metastasis is present. Breast and lung cancers are the most common primary neoplasms to manifest with choroidal metastases, in women and men respectively. Although metastasis of lung cancer to the choroid is the most common intraocular tumor, it is still relatively rare ranging from 0.10-7%. It is thought that this metastasis more rare location is possible because the cancerous cells are already so aggressive and adept to living in resistant environments. Additionally the vasculature of the choroid contributes to it having the highest rate of incidence of uveal metastasis. Metastasis can be unilateral or bilateral. In a study of 420 patients, Shields et al. reported bilateral presentation in 23.80% and unilateral in 76.20%.

It is important to note that ocular manifestation can be the initial presentation in about 34% of cases as reported by Shields et al. Ocular manifestation can be a single lesion. Given the ocular findings with history of metastatic adenocarcinoma of the lung, the patient was referred for an immediate consultation with an Ocular Oncologist. Who recommended radiation therapy and treatment plan was communicated with patient’s oncologist.

V. Treatment & Management

- Treatment options include: systemic chemotherapy, immunotherapy, external beam and plaque radiotherapy, bevacizumab injection, bevacizumab oral with platinum doublet, and enucleation.
- Determination of treatment depends on the extent of the choroidal metastasis and effect on the patients’ quality of life; as well as, the responsiveness of the lung cancer to treatment.
- Radiation Oncology Clinic recommended palliative whole brain radiation therapy. Patient elected to proceed with the recommended treatment.
- Patient passed away three months after initiation of treatment

VI. Conclusion

- When determining etiology and narrowing down differential diagnosis, a through systemic history is crucial.
Choroidal metastasis can be the initial presentation of cancer with a single ocular lesion. Timely and appropriate referral to oncology for confirmation and initiation of treatment improves patients’ quality of life and potential life span.

VII. References