CASE REPORT

Ciliary body tumour as the presenting manifestation of metastatic non-small cell adenocarcinoma of lung

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SUMMARY

We report a rare case of ciliary body metastasis from adenocarcinoma of the lung. Although the metastatic nodule was seen over the surface of the iris near the angle of anterior chamber, ultrasonography confirmed its origin from the ciliary body. Uveal metastasis may be the first sign of lung cancer.

BACKGROUND

This was a rare case of adenocarcinoma of the lung, presenting feature of which was ciliary body metastases. Ciliary body metastasis may be the first sign of lung cancer warranting an accurate evaluation of these patients for early detection and referral to an oncologist to institute appropriate therapy.

CASE PRESENTATION

A 51-year-old woman presented with a small mass inside the right eye for 1 year. It was painless, gradually progressive and not associated with decreased vision. There was no history of ocular trauma, surgery, loss of weight or appetite. She was a non-smoker and had no predisposing factors. On examination, her visual acuity was 6/6 and N6 in both eyes. Extraocular movements were full in both eyes. Anterior segment examination of the right eye showed mild ciliary congestion. A sentinel vessel was noted at 8 o'clock position near the limbus. The cornea was clear and anterior chamber showed cells (grade 2+). There was a white polypoid mass measuring around 4×1.7 mm with a vascular core arising temporally in the anterior chamber angle (figure 1A). Anterior segment examination of the left eye was within normal limits. Fundus examination including peripheral retinal examination with

scleral depression and intraocular pressures were within normal limits. There was no palpable lymphadenopathy. Gonioscopy in the right eye showed mass arising from the temporal angle occupying one clock hour. Other angles were open, and there was no angle neovascularisation, synechiae or pigmentation. Tumour seeding was noted in the inferior angle (figure 1B). Ultrasonography confirmed the presence of the mass in the ciliary body extending into the anterior segment.

INVESTIGATIONS

The patient underwent complete haemogram, chest X-ray, liver and renal function tests, which were normal. Contrast Enhanced Computed Tomography brain, orbit and paranasal sinuses along with upper Gastrointestinal endoscopy and colonoscopy were ordered which were reported normal. An aqueous tap was undertaken which revealed the presence of scattered atypical cells with round to oval nucleus abundant cytoplasm, prominent nucleolus and increased chromatin with binucleation and nuclear budding (figure 2A). The cells stained positive for pan-cytokeratin and vimentin and negative for S100, HMB 45, CD 68 and CD 10. Ki 67 was >60% positive in the tumour cells, suggestive of adenocarcinoma involving the ciliary epithelium.

The patient was further evaluated to rule out a possible distant primary considering the rarity of a primary ciliary body adenocarcinoma and the high percentage of positivity for Ki 67. Contrast-enhanced CT of thorax showed an irregular speculated heterogeneously enhancing soft tissue lesion in the anterobasal segment of left lung with surrounding glass opacification along with multiple small metastatic nodules in bilateral lung fields and heterogeneously enhancing

Figure 1 (A) Slit lamp photograph showing a white polypoidal mass measuring arising temporally in the anterior chamber angle. (B) Gonioscopic image showing tumour seeding in the inferior angle of anterior chamber.

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Figure 2 (A) Smears from eye aspirate showing scattered tumour cells with binucleation and nuclear budding. (B) Sections from lung biopsy showing tumour cells arranged in glandular pattern. (C) Immunohistochemistry for TTF-1 is positive in tumour cells. (D) Immunohistochemistry for CK-7 is positive in tumour cells.

left hilar, perivascular and right paratracheal lymph nodes (figure 3). Lung biopsy showed tumour arranged in irregular glandular pattern exhibiting mild to moderate anaplasia with extensive desmoplastic reaction (figure 2B). Immunohistochemistry showed that the tumour cells were positive for thyroid transcription factor TTF-1 and cytokeratin CK-7 (figure 2C,D). Serum level for CA125 was normal (8.5 U/mL) but carcinoembryonic antigen was elevated at 5.7 ng/mL (normal levels: 0–3 ng/mL).

DIFFERENTIAL DIAGNOSIS

A differential diagnosis of metastatic tumour or amelanotic melanoma was considered.

TREATMENT

A diagnosis of stage IV non-small cell carcinoma of lung with metastasis to the non-pigmented epithelium of ciliary body was made, and the patient was started on chemotherapy.

OUTCOME AND FOLLOW-UP

The patient received Cisplatin-based chemotherapy, showed some response and is surviving at 2 years' follow-up but developed brain metastasis and subsequently received radiotherapy. However, the ciliary body lesion did not recur and she did not require any local treatment. Her vision on last follow-up visit was 6/6 and N6 for distance and near, respectively.

DISCUSSION

Ocular metastasis commonly occurs from malignancy involving the breast, lung, gastrointestinal tract and kidney or prostate. The metastatic nodules usually involve the uveal tract due to its rich vascular network. The posterior choroid is commonly affected and only 5%–11% of uveal metastasis involves the ciliary body or iris.¹ Diagnosis of uveal metastasis precedes the diagnosis of primary lung cancer in 44% of patients since the

early diagnosis is often missed due to its subclinical presentation.² Ciliary body metastasis presents as a dome-shaped mass which may be difficult to visualise directly if present in the posterior chamber, with pupillary distortion, ectropion uvea and an episcleral sentinel vessel. Iris metastases presented most often as a yellow-to-white solitary nodule in the inferior quadrant with intrinsic vessels and associated with tumour seeding in the angle and/or iris stroma.^{2,3} Metastatic tumour to the iris and ciliary body, as an initial sign of lung carcinoma has been reported previously.^{4,5} Less frequently the metastasis can affect the eyelid, conjunctiva, optic nerve and orbit.^{6–8}

Systemic prognosis is poor, and nearly half of the patients with no known primary site eventually die of the diffuse metastatic disease. Stage IV lung cancer is also described as the

Figure 3 CT thorax image showing a lesion in the anterobasal segment of the left lung (arrow) along with multiple small metastatic nodules in bilateral lung fields.

advanced disease where the tumour has spread to lung fields, pleura, liver and other organs. Cisplatin-based chemotherapy is only beneficial to those with good performance status. Treatment for uveal metastasis depends on the primary tumour and its response to chemotherapy. For solitary metastasis, plaque radiotherapy is effective in 94% of eyes treated over a short 4-day period as the life expectancy is low.⁹ Large tumours with extensive subretinal fluid, associated with painful blind eye may require enucleation.

CONCLUSION

Uveal metastasis can be the presenting feature of lung carcinoma. Systemic evaluation to detect a primary malignancy is of utmost importance.

Learning points

- Ciliary body metastasis can be the presenting feature of lung carcinoma.
- It may be difficult to differentiate from a primary adenocarcinoma of the ciliary body.
- Systemic work-up and high Ki index favours the diagnosis of secondary tumour as primary tumour is slow growing and not mitotically active.

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