Immunoglobulin G4-related disease masquerading as metastatic malignant melanoma of the choroid

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DESCRIPTION

Immunoglobulin G4-related disease (IgG4-RD) is an immune-mediated fibro-inflammatory condition known to have a diverse range of clinical presentation, involving single or multiple organs. The lesion, in all such cases, shows characteristic lymphoplasmacytic infiltration with fibrosis on histopathological analysis. The most commonly involved sites include pancreas and salivary glands. Other common manifestations are lymphadenopathy, sclerosing cholangitis, tubulointerstitial nephritis and retroperitoneal fibrosis.¹ In ophthalmic clinical practice, IgG4-RD is usually encountered on tissue analysis of cases diagnosed with idiopathic orbital inflammatory disease. It may involve lacrimal gland (dacryoadenitis), sclera, extraocular muscles, optic nerve, trigeminal nerve and orbital bone.^{2,3} Elevated serum IgG4 levels maybe seen in many patients but is not diagnostic.

A 19-year-old girl presented with gradual painful loss of vision in the right eye for 2 months. The visual acuity was absence of light perception in the right eye, and 20/20 in the left eye. Slit lamp examination of the right eye showed an irregularly deep anterior chamber, with pigment deposition on the endothelium, and vitritis. Presence of a grade 4 vitritis precluded any visualisation of the posterior segment. The left eye examination was unremarkable. An ultrasound B-scan was suggestive of an intraocular lesion with heterogeneous echogenicity in the nasal part of the right globe. MRI showed an intraocular mass lesion, measuring 1.6×1.6 cm, in

Figure 2 Histopathological specimen showing (A) H&E x4 inflammation reaching upto the ciliary body (B) outer episcleral blood vessels and nerve twigs encircled by inflammation and dense fibrosis (C) x40 immunohistochemistry (IHC) staining positive for CD38 (intense positivity of plasma cells) (D) x40 IHC staining reveals positivity for IgG-secreting plasma cells (E) x40 IHC staining reveals clusters of IgG4-staining plasma cells (>50/high-power field).

the inferomedial part of the right globe. The lesion was hyperintense on T1-weighted imaging and hypointense on T2-weighted imaging, with heterogeneous post-contrast enhancement. Suspecting malignancy of the choroid, a whole-body CT scan was done to look for metastasis. It revealed heterogeneously enhancing areas of consolidation with few nodules in upper lobes of both the lungs. 18-fluorodeoxyglucose positron emission tomography/CT (¹⁸F-FDG PET/CT) showed increased metabolic activity in the lung lesions, and bilateral cervical (Level Ia, Ib, II, III and V) and mediastinal (right paratracheal, prevascular, subcarinal and right peribronchial) lymph nodes (figure 1). The patient was advised endobronchial biopsy of the lung lesion, but the procedure had to be deferred due to the prevailing COVID-19 situation at that point of time.

An enucleation of the right eye was considered as it was a painful blind eye, and a tissue analysis of the suspected malignancy was required. Histopathological examination of the tissue demonstrated a plasma-lymphocytic inflammatory infiltration with dense fibrosis and no evidence of malignancy (figure 2A,B). The plasma cells were positive for CD38 and IgG4, with >50 IgG4 + cells/high-power field (figure 2C–E). The serum IgG4 levels were found to be 215 mg/dL (normal <135 mg/dL), and the case was diagnosed as IgG4-RD. Immunosuppressive therapy (oral prednisolone 40 mg/day

Figure 1 Clinicoradiological presentation. (A) Inflammation of the right eye, with uveitis, vitritis and irregular anterior chamber depth MRI showing an intraocular lesion (B) hyperintense on T1-weighted imaging, (C) heterogeneous post-contrast enhancement, and (D) hypointense on T2-weighted imaging. (E) CT chest showing heterogeneously enhancing areas of consolidation with nodules (F) 18-fluorodeoxyglucose positron emission tomography/CT showing metabolically active fluorodeoxyglucose avid areas in the lung.

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Images in...

for 2 months tapered to a maintenance dose of 5 mg/day) was initiated by the department of internal medicine, resulting in the resolution of the lung lesions. No involvement of the other eye was noted at any time.

Involvement of multiple organs is frequently seen in IgG4-RD and is likely to be mistaken for metastatic disease, as in this patient. Increased uptake on ^{18}F -FDG PET/CT at other sites in our case was due to coexisting systemic involvement in IgG4-RD.

Patient's perspective

I had severe pain and redness in my right eye. I could not see anything with the right eye. I was told that I may have a tumour and the eyeball would need removal. I got to know that the disease may have spread to other parts of my body as well. Fortunately, it did not turn out to be a tumour and hopefully, I shall recover following completion of my therapy.

Learning points

- ▶ Immunoglobulin G4-related disease can mimic metastatic malignant melanoma of the choroid. Therefore, a high index of clinical suspicion can enable better management outcomes.
- ▶ In cases of suspected metastatic neoplasm with areas of increased uptake on 18-fluorodeoxyglucose positron emission tomography/CT, alternative causes of increased metabolic activity must be considered.

As a matter of fact, a whole-body ^{18}F -FDG PET/CT is now being used to guide the selection of biopsy site in suspected cases of IgG4-RD and to monitor the disease activity and the response to treatment.⁴

To conclude, IgG4-RD can rarely masquerade as an intraocular malignancy. Timely diagnosis can aid appropriate management of such cases.

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REFERENCES

- 1 Lang D, Zwerina J, Pieringer H. IgG4-related disease: current challenges and future prospects. *Ther Clin Risk Manag* 2016;12:189–99.
- 2 Ebbo M, Patient M, Grados A, *et al.* Ophthalmic manifestations in IgG4-related disease: clinical presentation and response to treatment in a French case-series. *Medicine* 2017;96:e6205.
- 3 Andrew N, Kearney D, Selva D. IgG4-Related orbital disease: a meta-analysis and review. *Acta Ophthalmol* 2013;91:694–700.
- 4 Zhang J, Chen H, Ma Y, *et al.* Characterizing IgG4-related disease with ^{18}F -FDG PET/CT: a prospective cohort study. *Eur J Nucl Med Mol Imaging* 2014;41:1624–34.

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