A RARE ADVERSE EFFECT OF PEMBROLIZUMAB – BILATERAL ANTERIOR OPTIC NEUROPATHY

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KEYWORDS
Pembrolizumab, optic neuropathy, immunotherapy, adverse effect

INTRODUCTION
Pembrolizumab is an anti-PD-1 monoclonal antibody used as novel treatment of metastatic non-small cell lung cancer. Immune-related adverse effects are rarely described, with scarce occurrences of ocular involvement. We describe a case of a patient undergoing treatment with pembrolizumab, who presented with a rapid decline in visual acuity due to bilateral optic disc inflammation.

CASE REPORT
A 69-year-old patient presented to the clinic with a 3-day deterioration of vision in both eyes. He reported no additional ocular symptoms. He had been undergoing cyclic radiotherapy and immunotherapy (4 cycles) with pembrolizumab for treatment of metastatic pulmonary sarcomatoid carcinoma. Upon presentation, best corrected visual acuity (BCVA) was 20/60 (Snellen) in the right eye and CF at 2 meters in the left eye. Ophthalmologic examination revealed mild bilateral cataract and optic disc swelling with blurred disc margins *(Figure 1)*. The right pupil was mydriatic and non-reactive, and positive RAPD was noted in the left eye. Colour perception was decreased in both eyes (Ishihara test 0/15). Optical coherence tomography (OCT) of the optic nerves showed increased thickness of peripapillary retinal nerve fiber layers (RNFL) in the right eye (OD) and nasal RNFL thinning in the left eye (OS) *(Figure 1)*. Initial standard automated perimetry (SAP) revealed a superior-central island of retained sensitivity OD and a complete field loss OS *(Figure 1)*. Additional imaging revealed no signs of intracranial metastases, and pembrolizumab was discontinued. The patient underwent treatment with pulse methylprednisolone (1000 mg, 3 days), followed by intravenous immune globulin therapy. Upon discharge, BCVA showed only subtle improvement and the patient commenced oral methylprednisolone tapering scheme. Follow-up after 4 months exhibited no further deterioration or improvement in BCVA of either eye, with bilateral pale optic nerves *(Figure 2)*. OCT revealed retinal bilateral ganglion cell loss and sectoral RNFL thinning, while SAP showed few increased areas of sensitivity in both eyes *(Figure 2)*.

CONCLUSION
Isolated optic neuropathy is a rarely noted complication of pembrolizumab immunotherapy. Treatment mainly relies on rapid immune checkpoint-inhibitor discontinuation combined with systemic corticosteroid treatment. Visual outcome may somewhat improve; however, long-term impairment is expected due to inflammatory process consequences and optic nerve atrophy. (1–4)

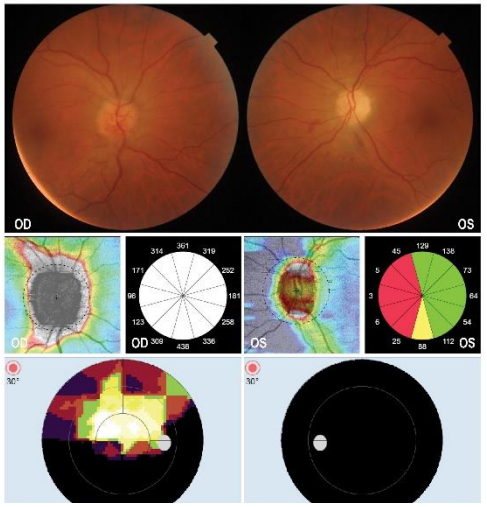


Figure 1: Upon presentation; colour fundus photography with optic disc oedema; optic nerve OCT with increased RNFL thickness OD and sectoral nasal RNFL thinning OS; SAP with superocentral retention of sensitivity OD (17,6 MD, 8,6 sLV) and complete loss of sensitivity OS (25,5 MD, 2,2 sLV).

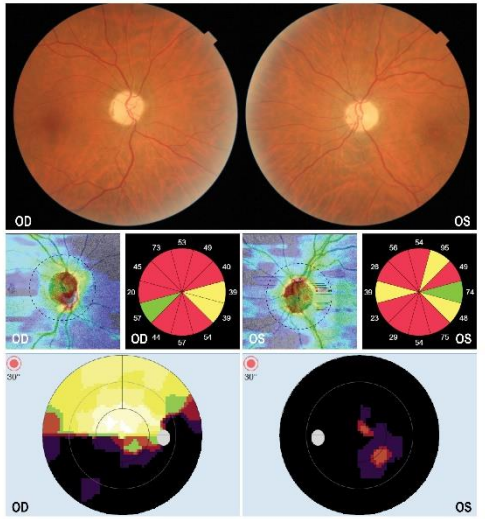


Figure 2: At follow up; colour fundus photography with pale disc and optic nerve atrophy; optic nerve OCT with sectoral superior and inferior RNFL thinning OD and supero- and inferonasal RNFL thinning OS; SAP with improved sensitivity in the superior visual field of the right eye (15,8 MD, 8,9 sLV) and central island of enhanced sensitivity (24,7 MD, 2,4 sLV).

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