Ocular inflammatory side effects of immune checkpoint inhibitors in a UK tertiary referral centre: optimising patient care.

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Introduction

Immune-checkpoint inhibitor (ICI) therapy has revolutionised cancer medicine. Increasingly, ICI are used earlier in disease and in combination with each-other. Although these agents are effective, they have been shown to cause various adverse effects due to dysregulation of the immune system leading to unintended autoimmune phenomena. We aim to share the UKs largest series of patients with ophthalmic complications (off-target 'immune-related adverse events" (irAEs)) associated with ICI therapy.

Methods

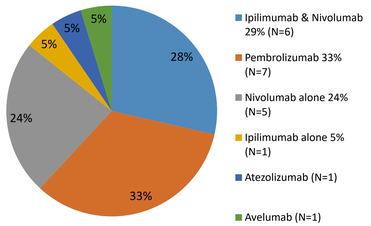
- Single institution
- Retrospective case series 2019-2024
- Electronic database searches , referral screening by the authors
  - Patients referred to the ophthalmic service for suspected ocular irAEs

Results: 21 patients with ocular irAEs

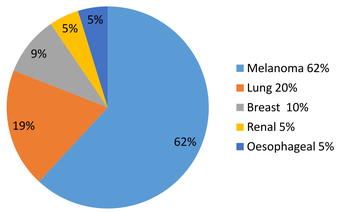
- Mean age 61 (range 35-84)
- F 76% (16/21)

Mean baseline VA (LogMAR)	At last follow-up	Follow-up (months)
RE 0.22	RE 0.20	Mean 22 (range 4-50)
LE 0.23	LE 0.20	

Immunotherpay agents



Underlying malignancy



Phenotypes	
Uveitis N= 6	Orbital involvement N=3 (dacryoadenitis *2, Myositis *1)
Optic disc swelling N = 3	Myasthenia gravis (N=2)
Disc swelling and uveitis N=2	Visual snow with dacryoadenitis (N=1)
Disc swelling with central serous chorioretinopathy appearance (N=1)	VKH- like syndrome (N=1)
Corneal involvement N=2	Sympathetic ophthalmia (N=1)

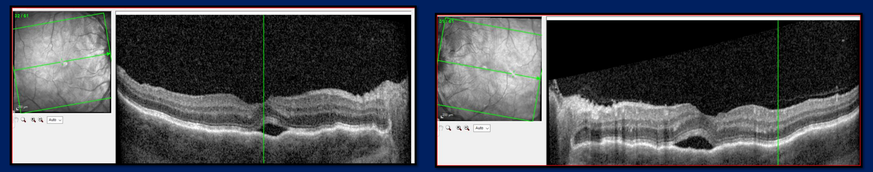


Figure 1. Macula OCT showing bilateral foveal detachment due to hypotony in a patient with uveitis induced by ipilimumab and nivolumab combination therapy (melanoma)

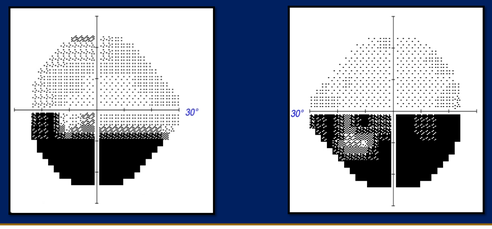


Figure 2. 24:2 visual fields in a patient with bilateral optic neuropathy secondary to ipilimumab and nivolumab. No improvement after 3 years.

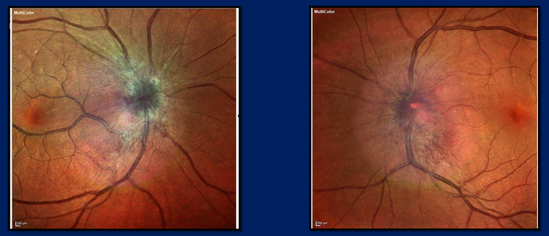


Figure 3. Heidelberg Multi-colour baseline photos of a patient on pembrolizumab with bilateral Grade 3 Frisen disc swelling.

Results: treatment

- Topical & local
  - Alone (n=4)
  - Topical, intravitreal, anti-VEGF (n=1)
  - Topical, subconj, Ozurdex, Iluvien (n=1)
- Oral
  - Oral alone (n=5) (*1 for brain mets)
- Combination (n=5)
  - Oral and IV (n= 1)
  - Oral and Infliximab (n=1) colitis
  - Oral, IV, Mycophenolate (n=1) nephritis, hepatitis
  - Oral, Mycophenolate (n=2) Systemic irAE

*one patient required escalation of treatment for systemic myasthenic symptoms.

Conclusion

Most Patients with ocular irAEs

•Respond well to topical, local, oral corticosteroids – sometimes not immediately
•Continue checkpoint therapy (as life-saving treatment) with close monitoring
•Severe deterioration in VA can sometimes be reversible (eg macular oedema)

Four basic steps

1) Document symptoms and signs
2) Escalate
3) Obtain an ophthalmological diagnosis
4) MDT approach to avoid interruption of therapy (communicate with local immuno-oncology team)

References

1. Masalkhi, M., Wahoud, N., Moran, B. *et al.* Impact of immune checkpoint inhibitors on vision and eye health. *Eye* **38**, 2854–2856 (2024). https://doi.org/10.1038/s41433-024-03212-z
2. Fenech, M., Ajanaku, A., Hsuan, J., *et al.* Immune checkpoint inhibitors and the orbit; two cases of reactive dacryoadenitis. *Orbit*, 1–5. (2024). https://doi.org/10.1080/01676830.2024.2385010