Aggressive Ocular Management Essential for Cancer Drug Complications

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Oncological therapies, while life-extending, frequently induce ocular complications that can significantly impair patient quality of life and adherence to treatment. The clinical dilemma lies in balancing cancer treatment efficacy with the prevention or mitigation of these vision-threatening adverse events. Immediate takeaway: clinicians must adopt an intentional, often aggressive, approach to managing ocular toxicities to ensure optimal patient outcomes.

KEY TAKEAWAYS

- The Pivot: Ocular toxicities from cancer drugs require proactive, aggressive management, moving beyond reactive approaches.
- The Data: Specific incidence rates vary widely by drug class, but ocular adverse events can affect up to 70% of patients on certain targeted therapies.
- The Action: Implement baseline ophthalmological assessments and consider prophylactic interventions for high-risk therapies.

The expanding landscape of cancer therapeutics, particularly with targeted agents and immunotherapies, has brought a corresponding increase in drug-induced ocular adverse events. These complications range from mild irritation to severe, vision-threatening conditions such as corneal ulceration, uveitis, and optic neuropathy. The challenge for clinicians is to identify patients at risk, monitor for early signs of toxicity, and intervene promptly to prevent irreversible damage. This requires a shift from a reactive stance to a proactive and often aggressive management strategy.

For instance, epidermal growth factor receptor (EGFR) inhibitors, commonly used in non-small cell lung cancer and colorectal cancer, are associated with a high incidence of ocular surface disease, including trichomegaly, blepharitis, and dry eye syndrome. The prevalence of these symptoms can be as high as 70% in patients receiving these agents. If left unmanaged, severe cases can lead to corneal erosions and secondary infections, necessitating temporary or permanent discontinuation of the oncological treatment. Similarly, immune checkpoint inhibitors (ICIs), which have revolutionised the treatment of melanoma, lung cancer, and other malignancies, can induce immune-related adverse events (irAEs) affecting nearly any organ, including the eye. Uveitis, scleritis, and optic neuritis are among the more serious ocular irAEs, requiring prompt diagnosis and immunosuppressive therapy to preserve vision.

Beyond EGFR inhibitors and ICIs, other classes of cancer drugs also pose significant ocular risks. BRAF inhibitors, used in melanoma, can cause retinal pigment epithelial detachment and uveitis. MEK inhibitors, often used in combination with BRAF inhibitors, are known for inducing serous retinopathy, characterized by fluid accumulation under the retina, which can lead to visual distortion and decreased acuity. Alkylating agents, while older, can still cause cataracts and

optic neuropathy, particularly with long-term use. Antimetabolites, such as 5-fluorouracil, are associated with lacrimal duct obstruction and canalicular stenosis, leading to epiphora (excessive tearing) and recurrent conjunctivitis. The mechanisms underlying these toxicities vary widely, from direct cellular damage to immune dysregulation, highlighting the complexity of managing these adverse events. Understanding the specific ocular toxicity profile of each agent is crucial for targeted surveillance and intervention.

Managing Ocular Toxicities

Effective management of ocular complications begins with a comprehensive baseline ophthalmological examination for patients initiating high-risk cancer therapies. This assessment should include visual acuity, intraocular pressure measurement, slit-lamp examination, and fundoscopy. Regular follow-up examinations are then crucial, tailored to the specific drug and patient risk factors. For therapies known to cause ocular surface disease, prophylactic measures such as preservative-free artificial tears, lid hygiene, and topical corticosteroids may be considered. Early intervention with specific treatments, such as topical antibiotics for bacterial conjunctivitis or systemic corticosteroids for immune-related uveitis, is paramount to prevent progression and minimise long-term sequelae.

The management approach must be intentional and, when necessary, aggressive. This means not hesitating to initiate high-dose topical or systemic corticosteroids for inflammatory conditions like uveitis or scleritis, or to refer promptly to an ophthalmologist for surgical intervention in cases of severe corneal disease or retinal detachment. Communication between the oncology team and ophthalmology specialists is essential to ensure a coordinated approach that prioritises both cancer control and ocular health. Discontinuation or dose reduction of the oncological agent may be necessary in severe, refractory cases, but this decision should be made collaboratively, weighing the risks and benefits to the patient's overall prognosis. The goal is to maintain the patient on their life-extending cancer therapy for as long as safely possible, without compromising their vision or quality of life due to preventable or treatable ocular complications. The limitations in current practice often stem from a lack of standardized screening protocols across different oncology centers and insufficient awareness among non-ophthalmology specialists regarding the potential severity of these ocular complications. Furthermore, the heterogeneous nature of patient populations, including varying comorbidities and genetic predispositions, can influence the manifestation and severity of ocular toxicities, making a one-size-fits-all approach challenging. Future research should focus on developing predictive biomarkers for ocular toxicity and refining personalized management strategies to optimize patient outcomes.

> **CLINICAL IMPLICATIONS**
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> The increasing complexity of cancer therapeutics demands a more integrated approach to patient care, particularly concerning ocular toxicities. It is no longer sufficient for oncologists to simply monitor for adverse events; a proactive and often aggressive strategy is now a clinical imperative. This implies that baseline ophthalmological assessments should become standard practice for patients commencing therapies with known ocular risks, rather than being an optional extra. The onus is on the oncology community to collaborate more closely with ophthalmology, establishing clear referral pathways and shared management protocols. For patients, this shift means a greater likelihood of preserving their vision and maintaining their quality of life while undergoing cancer treatment. Historically, ocular side effects might have been tolerated or led to treatment interruptions, but with intentional management, many can be mitigated or resolved. This

> improved patient experience can, in turn, enhance adherence to critical cancer therapies, potentially leading to better long-term oncological outcomes. Pharmaceutical companies developing new cancer drugs also bear a responsibility to provide clearer guidance on the incidence and management of ocular adverse events in their prescribing information, facilitating earlier recognition and intervention by clinicians.
> Ultimately, the emphasis on aggressive ocular management underscores a broader principle in modern medicine: the importance of holistic patient care. It highlights that successful cancer treatment extends beyond tumour shrinkage to encompass the patient's overall well-being. Guidelines from bodies like the American Academy of Ophthalmology or the European Society for Medical Oncology should increasingly incorporate detailed recommendations for the prevention and management of these specific toxicities, ensuring a consistent and high standard of care across institutions.

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