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Concurrent Ocular and Dermatologic Toxicities Associated With Docetaxel Chemotherapy

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Abstract

Docetaxel is an antineoplastic chemotherapy agent widely used in the treatment of a variety of malignancies. Despite its widespread use, ocular toxicities remain rare and literature is sparse regarding the identification and management of these toxicities, especially when they occur in combination with dermatologic toxicities. Here, we report two cases of combined ocular and dermatologic toxicities caused by the administration of docetaxel. Case 1 describes a 64-year-old man who developed epiphora, eye discharge, eyelid margin sores, and facial rash after cycle 2 of fluorouracil, leucovorin, oxaliplatin, and docetaxel (FLOT) chemotherapy for esophageal adenocarcinoma. Case 2 describes a 50-year-old woman with breast cancer who developed a widespread erythematous, desquamating rash with ocular lesions and discharge after cycle 2 of docetaxel-containing chemotherapy. Both cases included a previously reported, less serious constellation of symptoms one cycle prior to the onset of the more severe reaction(s) and concurrent presentation of significant dermatologic and ocular adverse events. Rapid identification and intervention under the care of both the oncology team and an ophthalmologist are crucial to minimize morbidity.

CASE STUDY 1

A 64-year-old man reported to the oncologist's office with complaints of excessive tearing, eye discharge, and sores on the eyelids on cycle 2, day 8 of fluorouracil, leucovorin, oxaliplatin, and docetaxel (FLOT) chemotherapy for the neoadjuvant treatment of stage III esophageal adenocarcinoma. In addition, the patient noted symptoms of dry, crusty nasal discharge and dried discharge around the mouth. The patient described having similar symptoms after cycle 1 of treatment, although he did not report them at that time nor were they noted on physical exams prior to this presentation.

The patient presented to the clinic for evaluation the following day with physical findings of excessive bilateral tearing (epiphora) with white, crusted drainage, conjunctival irritation, and ectropion changes to bilateral eyes (left > right). In addition, a rash was noted on the entire face and scalp, which was erythematous with scattered macules (Figure 1). The patient denied itching or any changes in visual acuity. He also denied significant sun exposure or use of new soaps or detergents. Topical desonide 0.05% was initiated twice daily for the facial rash and prednisolone 1% ophthalmic solution twice daily with alternating artificial tears 4 to 6 times daily for ocular toxicity. The patient was sent for urgent ophthalmologist examination.

The ophthalmologist examination noted bilateral ectropion (left > right), meibomitis with crusting scabs, and stringy, white discharge, without significant visual acuity changes. A diagnosis was made of ulcerative blepharitis secondary to toxic conjunctivitis caused by docetaxel chemotherapy. Erythromycin ointment three times daily was initiated for infection prevention, with continuation of the previously prescribed prednisolone eye drops and artificial tears. Senile ectropion of the left lower eyelid would require surgical intervention after completion of chemotherapy.

The patient returned to clinic 6 days after initial presentation with significant improvement of both epidermal and ocular findings (Figure 2). He received cycle 3 of chemotherapy, with the omission of docetaxel. Oxaliplatin was considered as a potential causative agent, although this was deemed less likely due to the coinciding dermatologic reaction that indicated a higher likelihood of docetaxel reaction. Cycle 3 proceeded without incident. Rechallenge of docetaxel was initiated with cycle 4, with instruction for the aggressive use of artificial tears to prevent the recurrence of ocular symptoms. Recurrence of mild epiphora was noted after the restart of docetaxel; however, eye inflammation and rash did not recur.

CASE STUDY 2

A 50-year-old woman with newly diagnosed estrogen receptor–positive/progesterone receptor–positive/HER2-positive breast cancer began treatment with standard-of-care docetaxel,

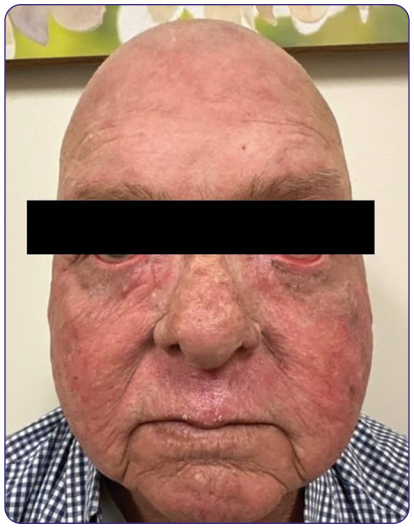

Figure 1. Bilateral conjunctival irritation and erythematous facial/scalp rash with scattered macules.

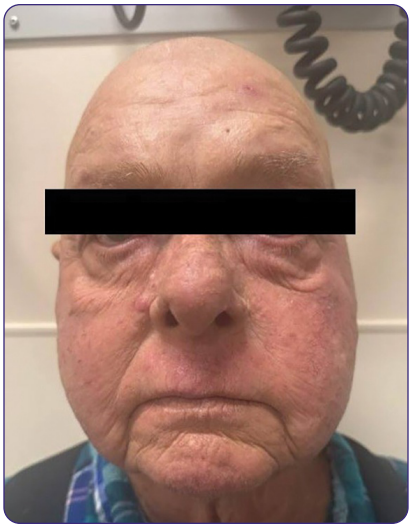

Figure 2. Improvement of both epidermal and ocular findings following treatment with topical desonide, prednisolone ophthalmic solution, artificial tears, and erythromycin ointment.

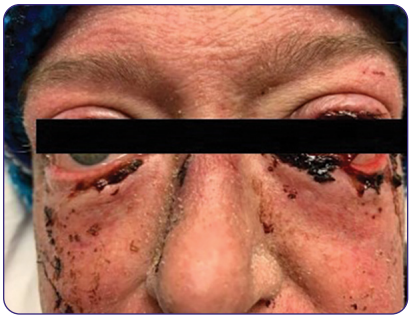

Figure 3. Severe desquamating rash of the bilateral extremities, genitalia, nares, and periorbital area.

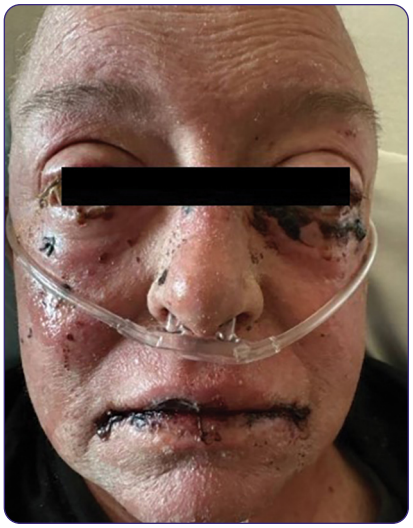

Figure 4. Multiple erythematous lesions with hemorrhagic crusts.

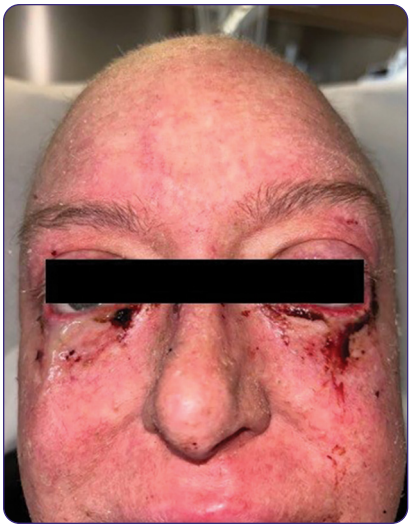

Figure 5. Improvement of dermatologic and ocular toxicities after inpatient supportive care including ophthalmic dexamethasone, cyclosporine, antibiotics, artificial tears, and Prokera amniotic disks.

carboplatin, trastuzumab, and pertuzumab (TCHP). Eight days after initiating therapy, she presented to the emergency department with mucositis and was discharged home with a compounded mouthwash (viscous lidocaine, diphenhydramine, and magnesium hydroxide/aluminum hydroxide). She returned to the urgent care clinic 2 days later and was admitted to the hospital for worsening mucositis, viral respiratory infection, diarrhea, and rash. The rash was documented as erythematous, pruritic, nonpainful patches on bilateral hands, chest, and upper back. No ocular involvement was documented in this encounter. The patient was discharged after the 3-day hospital stay with rash and mucositis symptoms controlled on topical steroids, an oral antihistamine, compounded mouthwash, and oral opioids.

Between cycles 1 and 2 of chemotherapy, a new pulmonary lesion was identified and determined to be poorly differentiated adenocarcinoma. Carboplatin was removed from the treatment plan, and the patient was to continue therapy with trastuzumab, pertuzumab, and dose-reduced docetaxel. Mucositis prophylaxis was broadened with the addition of a dexamethasone oral solution. The patient's mucositis and rash had resolved by the start of cycle 2.

Eight days after receiving her second dose of docetaxel, she was admitted for severe desquamating rash of the bilateral extremities, genitalia, nares, and periorbital area (Figure 3). Multiple erythematous lesions with hemorrhagic crusts were identified (Figure 4). Significant ocular involvement was present, but no major visual changes were noted. Ophthalmology was consulted and confirmed ocular mucositis with positive conjunctival and lid margin staining but no corneal involvement. The patient was started on an intensive topical ophthalmic regimen including moxifloxacin 0.5%, dexamethasone 0.1%, cyclosporine 0.05%, tobramycin 0.3%, and aggressive lubrication with artificial tears. Prokera amniotic disks were also placed in both eyes. Stevens-Johnson syndrome (SJS)/toxic epidermal necrolysis (TEN) was ruled out. A skin biopsy was performed by dermatology that was consistent with toxic erythema of chemotherapy (TEC). Ocular involvement is generally rare with TEC but has been documented in SJS/TEN-like presentations. The patient remained admitted and received supportive care until being discharged 14 days later (Figure 5). Due to the severity of the reaction, docetaxel therapy was not rechallenged.

Despite the advent of novel oncolytic mechanisms, chemotherapy remains a mainstay of anticancer therapy regimens. Docetaxel, a microtubule inhibitor chemotherapy, was initially approved by the FDA in 1996 and remains a key component in treatment regimens for more than a dozen cancer types (Sanofi Aventis, 1996). While dermatologic reactions are a relatively common adverse event with docetaxel (20%–48% all grades, 5% grade 3–4), ocular toxicities are extremely rare, with the incidence estimated at around 1.1% for all grades in all taxane-class chemotherapy agents combined (Sandoz, 2023; Sodhi et al., 2022; Fortes et al., 2022). The prescribing information for docetaxel outlines the potential severity of these reactions, with the more severe dermatologic reactions (Stevens-Johnson syndrome, toxic epidermal necrolysis, toxic erythema of chemotherapy, and acute generalized exanthematous pustulosis have all been reported) and ocular toxicities (cystoid macular edema [CME]) having the potential to cause permanent morbidity if not identified and treated promptly (Sandoz, 2023). Therefore, it is important for the oncology clinician to be aware of the possibility of these toxicities and familiar with the further workup and treatment necessary to minimize the risk of morbidity and possibly life-threatening complications in patients.

Ocular toxicities from docetaxel have been described in a number of case reports and meta-analyses over the past 25 years (Sandoz, 2023; Sodhi et al., 2022; Fortes et al., 2022; Esmaeli, 2005; Esmaeli et al., 2002; Kaya et al., 2008; Yamagishi et al., 2014). Importantly, several studies have implicated weekly administration of docetaxel as carrying a far higher risk of ocular adverse events than its every-3-week counterpart. The most common ocular toxicity seen with docetaxel is epiphora, a profuse and constant tearing of the eye. In every-3-week docetaxel, epiphora is noted to typically be mild, transient, and caused by inflammatory conjunctivitis (Esmaeli, 2005). Although data are based on a small number of patients, it is postulated that direct irritation/inflammation of the eye mucosa via the secretion of small amounts of docetaxel in tears may be responsible for ocular toxicities (Sodhi et al., 2002; Esmaeli et al., 2002). Epiphora itself can be bothersome and impair quality of life, but can also be associated with the development of more serious toxicities such as canicular stenosis, CME, or optic neuropathy (Sodhi et al., 2022; Fortes et al., 2022; Esmaeli, 2005). These severe toxicities can lead to temporary to permanent decreases in vision and may require surgical intervention or the cessation of docetaxel therapy (Sodhi et al., 2022; Esmaeli, 2005).

Based on prescribing information and case reports, patients on docetaxel presenting with epiphora should receive urgent ophthalmic examination (Sandoz, 2023; Esmaeli, 2005). Far less common are ocular events associated with toxic erythema of chemotherapy (TEC), which may present as ocular mucositis. Toxic erythema of chemotherapy is an overarching term that comprises a range of cutaneous reactions that typically present with painful erythema, edema, and desquamation commonly encompassing the hands, feet, and intertriginous areas (Bolognia et al., 2008). In severe cases, mucosal and perioral involvement can occur, but this has only been documented in limited case reports.

To our knowledge, there are little data documenting the incidence and severity of dermatologic and ocular toxicities secondary to docetaxel chemotherapy occurring concurrently (Kaya et al., 2008). These two cases add to the literature for these rare but potentially serious complications of a commonly utilized chemotherapy agent.

IMPLICATIONS FOR PRACTICE

Dermatologic adverse events are often treated with topical or systemic corticosteroids based on severity (Table 1), in addition to baseline recommendation for use of sun protection and emollients as needed. Dependent on the type and severity of the ocular toxicity (Table 2), pharmacologic interventions typically include artificial tears to flush the eye surface, topical corticosteroids to treat the inflammatory process, and possibly a topical anti-infective if infection is suspected or if the patient is at an elevated risk for the development of infection in the affected eye

Table 1. Grading for Select Dermatologic Adverse Events

Adverse event	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Pruritis	Mild or localized; topical intervention indicated	Widespread and intermittent; skin changes from scratching (e.g., edema, papulation, excoriations, lichenification, oozing/crusts); oral intervention indicated; limiting instrumental ADL	Widespread and constant; systemic corticosteroid or immuno-suppressive therapy indicated; limiting sleep or self-care ADL	-	-
Pustular drug eruption	Asymptomatic	Associated with psychosocial impact; oral antibiotics or steroid indicated; local intervention indicated (e.g., topical antibiotic, antifungal, or antiviral); limiting instrumental ADL	Severe symptoms; IV antibiotic or steroid indicated; limiting self-care ADL	Life-threatening consequences	Death
Rash: maculopapular	Asymptomatic	Mild symptoms	Macules/papules covering > 50% BSA; moderate or severe symptoms	Life-threatening consequences; urgent intervention indicated	Death
Rash: papulovesicular	Asymptomatic	Associated with psychosocial impact; mild symptoms	Covering > 50% BSA; moderate or severe symptoms	Blisters covering > 75% BSA; life-threatening consequences	Death
Toxic epidermal necrolysis	-	-	-	Skin sloughing covering ≥ 30% BSA with associated symptoms (e.g., erythema, purpura, or epidermal detachment); life-threatening consequences	Death

Note. ADL = activities of daily living; BSA = body surface area. Adapted from NCI (2025).

(Sodhi et al., 2022; Esmaeli, 2005; Yamagishi et al., 2014). Surgical intervention with stent placement may be warranted if canicular stenosis is found and docetaxel is clinically appropriate to continue for necessary anticancer response (Esmaeli, 2005). Docetaxel cessation is warranted in severe cases or when an alternative chemotherapy agent is appropriate to attain the desired anticancer effect (Esmaeli, 2005; Yamagishi et al., 2014).

Commonalities seen in these two cases include a previously reported, less serious constellation of symptoms one cycle prior to the onset of the more severe reaction(s), and concurrent presentation of severe dermatologic and ocular adverse events. These cases demonstrate the importance of recognition that these adverse events of docetaxel may escalate in severity from one cycle to the next, and the possibility that ocular events (while rare) may coincide with dermatologic events.

Table 2. Grading for Select Ocular Adverse Events

Adverse event	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Watering eyes (epiphora)	Intervention not indicated	Symptomatic; moderate decrease in visual acuity (best corrected visual acuity 20/40 and better or 3 lines or less decreased vision from known baseline)	Marked decrease in visual acuity (best corrected visual acuity worse than 20/40 or more than 3 lines of decreased vision from known baseline, up to 20/200)	Best corrected visual acuity of 20/200 or worse in the affected eye	-
Dry eye	Clinical or diagnostic observations only; symptoms relieved by lubricants	Symptomatic; moderate decrease in visual acuity (best corrected visual acuity 20/40 and better or 3 lines or less decreased vision from known baseline)	Symptomatic with marked decrease in visual acuity (best corrected visual acuity worse than 20/40 or more than 3 lines of decreased vision from known baseline, up to 20/200); limiting self-care ADL	-	-
Conjunctivitis	Asymptomatic or mild symptoms; intervention not indicated	Symptomatic; moderate decrease in visual acuity (best corrected visual acuity 20/40 and better or 3 lines or less decreased vision from known baseline)	Symptomatic with marked decrease in visual acuity (best corrected visual acuity worse than 20/40 or more than 3 lines of decreased vision from known baseline, up to 20/200); limiting self-care ADL	Best corrected visual acuity of 20/200 or worse in the affected eye	-
Corneal ulcer	-	-	Corneal ulcer without perforation in the affected eye	Perforation in the affected eye	-

Note. ADL = activities of daily living. Adapted from NCI (2025).

IMPLICATIONS FOR APs

Docetaxel remains a commonly utilized chemotherapy agent in many cancer types, and as such it is often advanced practitioners (APs) who are seeing these patients at their interval office visits and are the first to identify potential adverse events and initiate management. Given the potential severity of these symptoms, which can escalate from one cycle to the next, prompt initiation of interventions and necessary referrals is of the utmost importance to prevent severe and potentially permanent morbidities.

Ocular adverse events from docetaxel present with a wide variety of symptoms but frequently include epiphora and often have an inflammatory process as the underlying cause. As such, prompt initiation of corticosteroid eye drops and an urgent referral to ophthalmology are of paramount importance. Additionally, as the probable mechanism of toxicity is a topical inflammation caused by docetaxel secretion in tears, use of artificial tears frequently (4–6 times per day) to flush the eye and reduce irritant contact time is a primary intervention. As demonstrated with case study 1, with a moderate severity reaction where treatment leads to prompt symptom resolution, rechallenge of docetaxel with the addition of prophylactic interventions is a reasonable consideration. The prompt initiation of topical corticosteroids for rashes can relieve symptoms; however, particular attention needs to be paid to coexisting ocular and perioral symptoms such as the aforementioned

ocular toxicities and/or mucositis of the nasal and mouth area. This combination of symptoms should trigger more sensitive follow-up, as these may rarely be early signs of a more serious dermatologic reaction in subsequent cycles.

CONCLUSION

While low-grade dermatologic adverse events are well reported with docetaxel, severe dermatologic events and/or ocular adverse events are rare. There is also a paucity of data available for these cases. Additionally, within the small number of cases, the number of those with reported interventions is low. Given the possibility of these adverse events increasing in severity with the continuation of therapy and the potential for severe reactions to cause significant or permanent morbidity for patients, it is crucial for APs to recognize the early signs of these potential toxicities and intervene.

While robust, controlled data will likely always be lacking due to the low frequency of these adverse events, prompt initiation of ophthalmic corticosteroids, artificial tears, and a referral to ophthalmology for these ocular adverse events have shown the potential to alleviate symptoms and leave open the option for rechallenge of docetaxel therapy. Dermatologic adverse events have also shown promising response to topical corticosteroid and emollient therapy, as well as a reduction in sun exposure. Most crucially, it is important to monitor these patients closely in subsequent treatment cycles for signs of worsening symptoms so that the risk of undue morbidity is minimized, and patient quality of life is maintained to the highest degree.

Disclosure

The authors have no conflicts of interest to disclose.

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