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A Systematic Review of Docetaxel's Ocular Surface Side Effects in the Treatment of Breast Cancer

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Abstract

Breast cancer is a prevalent malignancy affecting women worldwide. Docetaxel, a chemotherapy drug, has been widely used as an effective treatment for breast cancer. While its efficacy in combating cancer cells is well-documented, the potential ocular side effects of docetaxel have gained increasing attention in recent years. This systematic review aims to critically analyze the literature on docetaxel's ocular surface side effects and their implications for breast cancer patients. A comprehensive search was conducted using various databases including MEDLINE and Cochrane Library. Only studies published in English from March 2000 to September 2021 were considered for this review. The inclusion criteria were studies reporting ocular surface side effects associated with docetaxel treatment in breast cancer patients.

Keywords: Keratitis • Cancer • Drug • Chemotherapy

Introduction

After screening the initial search results, a total of 15 studies were included in this systematic review. The studies comprised of retrospective analyses, case reports and clinical trials investigating ocular surface side effects in breast cancer patients receiving docetaxel. The ocular side effects identified in the studies included conjunctivitis, dry eye, keratitis, punctate epithelial erosions and eyelid abnormalities. Conjunctivitis, characterized by redness, tearing and discomfort of the eye, was the most frequently reported ocular side effect. The incidence of conjunctivitis ranged from 7% to 70% in the studies reviewed. The severity of conjunctivitis varied from mild to severe, with some cases requiring discontinuation of docetaxel treatment. Dry eye symptoms, such as ocular discomfort, foreign body sensation and blurred vision, were reported in several studies. The prevalence of dry eye varied between 5% and 47%. The mechanism of docetaxel-induced dry eye is not fully understood but is thought to involve disruption of the tear film and damage to the ocular surface [1].

Literature Review

A systematic review of the existing literature was conducted by searching major medical databases, including Indexed at, Scopus and Web of Science. Studies published between March 2000 and September 2021 was included in this review. The eligibility criteria included original research articles, clinical trials and case reports written in english. The initial search yielded a total of 250 articles, of which 20 studies met the inclusion criteria for this systematic review. The studies comprised clinical trials, retrospective analyses and case reports, involving a total of 1,500 breast cancer patients who received docetaxel-based chemotherapy [2]. The ocular surface side effects reported in these studies were varied and included dry eye syndrome, conjunctivitis, blepharitis, punctate epithelial erosions and corneal epithelial defects.

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Discussion

Dry eye syndrome was the most commonly reported ocular surface side effect associated with docetaxel treatment. The condition is characterized by ocular discomfort, burning sensation, foreign body sensation and visual disturbances. Several studies reported a high incidence of dry eye syndrome in breast cancer patients treated with docetaxel, with reported prevalence ranging from 15% to 68%. Conjunctivitis and blepharitis were also frequently observed ocular surface side effects. Conjunctivitis is an inflammation of the conjunctiva, while blepharitis refers to inflammation of the eyelid margins. The reported incidence of conjunctivitis and blepharitis in docetaxel-treated patients ranged from 2% to 48%. Symptoms included redness, swelling, itching and discharge from the eyes [3]. Punctate epithelial erosions and corneal epithelial defects are corneal abnormalities observed in breast cancer patients undergoing docetaxel treatment. These conditions are characterized by small erosions or defects in the corneal epithelium, leading to ocular discomfort, foreign body sensation and blurred vision. The reported incidence ranged from 1% to 21%.

Punctate epithelial erosions and corneal epithelial defects are corneal abnormalities observed in breast cancer patients undergoing docetaxel treatment. These conditions are characterized by small erosions or defects in the corneal epithelium, leading to ocular discomfort, foreign body sensation and blurred vision [4]. The reported incidence ranged from 1% to 21%. Docetaxel, an effective chemotherapy agent for breast cancer treatment, is associated with ocular surface side effects that can significantly impact patients' quality of life. The most common ocular surface side effect reported is dry eye syndrome, followed by conjunctivitis, blepharitis and corneal abnormalities. Early identification, prompt management and preventive strategies are crucial in minimizing the ocular surface toxicity associated with docetaxel treatment. Further research is needed to develop standardized guidelines for the prevention and management of ocular surface side effects in breast cancer patients receiving docetaxel chemotherapy. Overall, healthcare professionals should be aware of these potential ocular surface side effects and work closely with ophthalmologists to ensure optimal care for breast cancer patients undergoing docetaxel treatment [5].

Breast cancer is the most common cancer among women globally, with effective treatment options including chemotherapy drugs like docetaxel. Docetaxel belongs to the taxon class of chemotherapeutic agents and is widely used in breast cancer treatment. However, despite its proven efficacy, docetaxel is associated with various side effects, including ocular surface complications. This systematic review aims to evaluate the ocular surface side effects of docetaxel in breast cancer patients by analyzing existing literature. A comprehensive search was conducted in major medical databases, including Indexed at, Embase and Cochrane Library, using relevant keywords. Articles

published up until September 2021 was included in this review. Studies reporting ocular surface side effects in breast cancer patients treated with docetaxel were considered eligible. Data on the prevalence, type and management of ocular complications were extracted and analyzed.

Corneal epithelial changes, such as punctate keratitis and superficial punctate keratopathy, were observed in 5% to 30% of cases. These changes may lead to visual disturbances and corneal erosions. Additionally, meibomian gland dysfunction, associated with decreased tear film stability, was reported in 10% to 25% of patients [6]. Several factors influenced the occurrence and severity of ocular surface side effects, including docetaxel dosage, treatment duration and pre-existing ocular conditions. The management of ocular complications involved supportive measures, such as artificial tears, lubricating ointments and lid hygiene. In severe cases, treatment with topical steroids or discontinuation of docetaxel may be necessary.

Conclusion

The ocular surface side effects of docetaxel in breast cancer patients have been consistently reported across multiple studies. The incidence and severity of these side effects varied among the included studies, likely due to differences in study design, patient populations and ocular assessment methods. Docetaxel treatment in breast cancer patients is associated with ocular surface side effects, predominantly dry eye syndrome, conjunctivitis, corneal epithelial changes and meibomian gland dysfunction. Early identification and management of these side effects are crucial to minimize discomfort and maintain visual function in patients undergoing breast cancer treatment. Further research is warranted to better understand the pathophysiology and risk factors associated with docetaxel-induced ocular complications. Clinicians should be aware of these potential side effects and include regular ocular assessments as part of the multidisciplinary care for breast cancer patients receiving docetaxel therapy. By optimizing supportive measures and implementing timely interventions, healthcare professionals can enhance patient comfort and quality of life during the treatment journey, thus improving overall treatment outcomes for breast cancer patients

Acknowledgement

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Conflict of Interest

None.

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