

# Evaluation of Risk Factors for Dupilumab-Associated Ocular Sequelae in the Treatment of Atopic Dermatitis

Varsha Reddy<sup>1</sup>; Alexa Lum<sup>1</sup>; Katerina Kitsios<sup>1</sup>; Swarna Shil<sup>1</sup>; Alanna Nattis, DO<sup>2</sup>

<sup>1</sup>Michigan State University College of Osteopathic Medicine

<sup>2</sup>New York Institute of Technology College of Osteopathic Medicine



## Introduction

- Atopic dermatitis (AD) is a complex immune-driven skin disorder characterized by epidermal dysfunction
- Dupilumab is a monoclonal antibody treatment that inhibits IL-4 and IL-13 signaling
- Treatment with dupilumab yields a positive dermatological response in patients with moderate-to-severe atopic dermatitis
- Dupilumab is mainly used in those who fail or cannot tolerate topical treatments
- Ocular sequelae such as conjunctivitis, blepharitis, keratitis, and dry eye syndrome are recognized as potential side effects of dupilumab therapy
- Few studies exist that describe risk factors for developing dupilumab-associated ocular sequelae

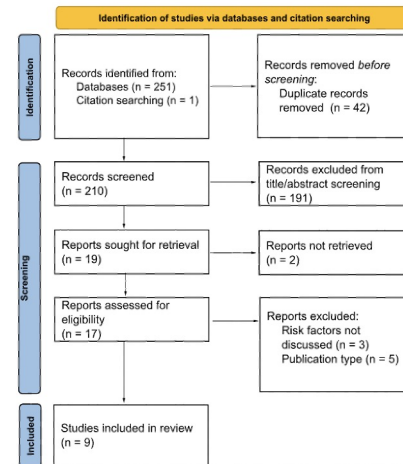
## Objective

This study aims to highlight the risk factors associated with the development of dupilumab-associated ocular surface disease (DAOSD) described in the literature.

## Methods

- PubMed and ScienceDirect databases searched in April 2024
- Key search terms included “dupilumab”, “atopic dermatitis”, “demographics”, “risk factors”, “ocular”, “keratitis”, “conjunctivitis”, “side effects”
- 9 articles included after deduplication, title/abstract screening, full-text review, and quality appraisal
- Inclusion criteria: written in English and discussion of risk factors for ocular side effects of dupilumab
- Exclusion criteria: discussion of other biologic agents or ocular conditions of other origins

## PRISMA Chart



From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* 2021;372:n71. doi: 10.1136/bmj.n71

## Results cont.

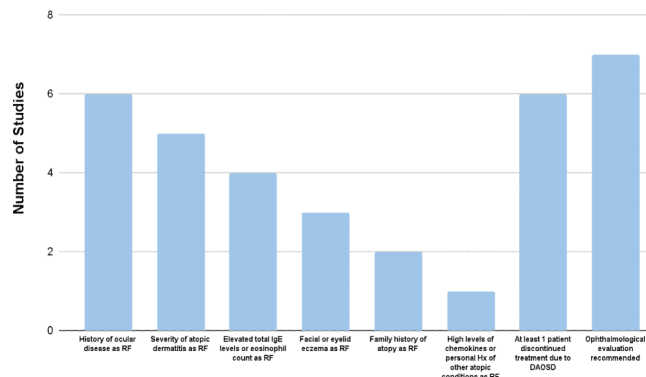
- 6 out of 9 studies described a prior history of ocular disease as a risk factor (RF) for DAOSD
- 5 out of 9 studies highlighted severe AD as a RF
- 4 out of 9 studies cited elevated total IgE levels and eosinophil count as a RF for DAOSD
- 3 out of 9 studies described facial or eyelid eczema as a RF
- 2 out of 9 studies cited family history of atopy as a RF
- 1 study cited high levels of chemokines, as well as personal history of other atopic conditions as a RF
- At least 1 patient needing to discontinue treatment due to DAOSD was reported in 6 out of 9 studies
- 7 out of 9 studies included a recommendation for ophthalmological evaluation prior to or during treatment with dupilumab

## Discussion

- Potential risk factors for the development of DAOSD emerged in review of past studies
- Prior history of ocular disease is most frequently cited
- Patients treated with dupilumab for atopic dermatitis have higher severity or refractory disease
- Implications on quality of life of patients if treatment is discontinued due to ocular side effects
- Risk stratification when taking initial patient history
- Provider awareness of potential for ocular side effects and patient counseling are starting points
- Additional studies needed to better understand the risk factors for DAOSD and prevent further complications
- Further research: whether severity of atopic dermatitis influences manifestation of DAOSD, timeline of ocular side effects to be expected
- Limitations: small sample size and lack of control group in some studies, lack of gender and racial representation in some studies

## Results

### Risk Factors (RF) and Recommendations for DAOSD



## References

