DOI: 10.14744/eer.2024.20982
Eur Eye Res 2024;4(2):150–153

EUROPEAN EYE RESEARCH

CASE REPORT

A case report of Polish cochineal larvae infestation of eyelid

Mehmet Canleblebici,[1] Mehmet Balbaba[2]

[1]Department of Ophthalmology, Kayseri State Hospital, Kayseri, Türkiye
[2]Department of Ophthalmology, Firat University, Elazig, Türkiye

Abstract

The Polish cochineal (Porphyrophora polonica), a scale insect, has been integral to the textile and dye industries of Europe and Central Asia for centuries, prized for its ability to produce a vivid red dye. This insect, although commonly associated with its utility in historical dyeing practices, seldom crosses paths with the medical field. However, an unusual case report from Akdağmadeni, a region renowned for its dense oak and pine forests which create a conducive environment for ticks, highlights a rare intersection. In this case report, the Polish cochineal larva, which was mistakenly diagnosed as a tick, was removed from the eyelid of a 57-year-old female patient, and the allergic reaction it caused is presented. The case underscores this rare infestation with the significance of accurate diagnosis in the prevention of unnecessary medical interventions.

Keywords: Allergy of eye; eyelid; cochineal; polish; tick.

The intersection of entomology and clinical medicine often reveals surprising insights into the impact of insects on human health. Among the myriad of species, the Polish cochineal (Porphyrophora polonica) holds a distinctive place in history for its use in producing vibrant red dyes, a practice that dates back centuries in Europe and Central Asia.[1-3] This scale insect, primarily of interest to historians and biologists, unexpectedly finds relevance in the field of ophthalmology due to a rare and intriguing clinical case. Akdağmadeni, a region known for its lush oak and pine forests and consequently, a high prevalence of tick-related incidents, this case report unveils a unique encounter between a human and a Polish cochineal larva. The report delves into the misdiagnosis of the larva as a tick after it attached to the eyelid of a 57-year-old female, leading to an allergic reaction. In this unusual case report, we aim to highlight the significance of accurate diagnosis of an insect infestation in clinical practice and the implications of such interactions for public health and medical research.

Case Report

A 57-year-old female patient applied to the outpatient clinic complaining of severe itching and redness in her right eye. It was learned that the day before the patient's history, sand got into her eye while gardening, and she scratched her eye severely. In the examination of the patient, visual acuity in both eyes was 1.0 on the Snellen chart. No pathology was observed in the biomicroscopic examination of the left eye. The right eye had a

Cite this article as: Canleblebici M, Balbaba M. A case report of Polish cochineal larvae infestation of eyelid. Eur Eye Res 2024;4(2):150–153.

Correspondence: Mehmet Canleblebici, M.D. Department of Ophthalmology, Kayseri State Hospital, Kayseri, Türkiye
E-mail: mehmetcl@hotmail.com
Submitted Date: 20.03.2024 **Revised Date:** 17.04.2024 **Accepted Date:** 02.05.2024 **Available Online Date:** 01.08.2024

conjunctival hemorrhage and edematous around the conjunctiva lateral canthus. Other examination findings were normal. (Fig. 1) Bilateral eye pressures are within normal values with air puff tonometry. On the right lateral edge of the palpebral fissure, an object of approximately 2–3 mm in size with dark red oval-shaped with horizontal grooves, but no leg structure was detected (Fig. 2). At first, it was thought that the patient living in the endemic area for ticks might have a tick on her eyelid, then it was suspected that it might be a seed or another insect species due to the absence of leg and mouth structures. The object was removed from the eye with the help of forceps carefully, and it was observed that there was no attachment with any mouth structure. The object taken from the lid was taken to a veterinarian for examination under a microscope. On detailed examination under the microscope, it was determined that this object was a Polish cochineal larva (Fig. 3). The patient was started on topical steroids and antihistamines due to her allergic reaction. After 2 weeks of follow-up, the reaction disappeared, and the hemorrhage was resorbed (Fig. 4).

Written informed consent was obtained from the patient and her family to publish this case report and accompanying images.

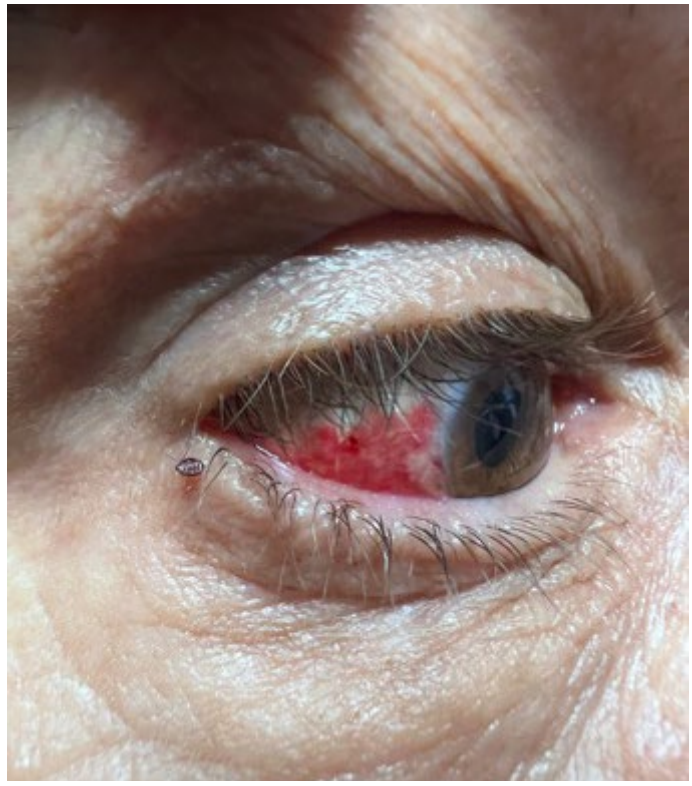

Fig. 1. The photography of the right eye with conjunctival hemorrhage and edema around the conjunctiva lateral canthus.

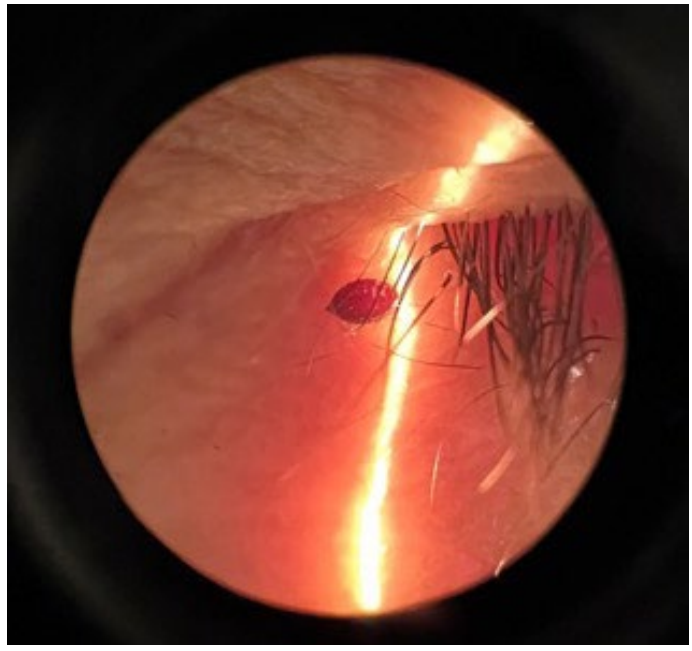

Fig. 2. The biomicroscopic image of red, oval-shaped with horizontal grooves object on the eyelid near the right lateral palpebral fissure edge.

Discussion

The presented case report sheds light on an intriguing and rare incident involving the Polish cochineal (P. polonica), a scale insect renowned for its historical and valuable role in the production of red dyes in Europe and Central Asia. This insect, primarily associated with the dye industry, found an unexpected place in the medical literature due to its mistaken identification as a tick during a clinical diagnosis. The setting for this unusual discovery is Akdağmadeni, an area known for its endemic tick population attributed to the extensive oak and pine forests in the region.

The Polish cochineal is an insect used to make red paint since the 6th century. It is distributed in Europe and Asia, from Poland to Kazakhstan.[1] In the research of Serrano et al. Lech and Jarosz, it has been shown that dyes produced from this insect are also available in Türkiye.[2,3] This insect contains carminic acid as a dye content. Allergic reactions to carminic acid can be observed.[4-6] In our case, an allergic reaction may have developed against the high content of the carminic acid component of Polish cochineal or other components. Early removal of the larva and treatment with topical steroids and antihistamines can control the allergic reaction in and around the eyes.

Tick infestations should be considered in the differential diagnosis due to cochineal which has structural similarities to ticks. Although, tick infestation of the eyelid is a rare tick infestation seen in endemic areas such as our region.

Fig. 3. The enlarged image of the Polish cochineal larvae.

Fig. 4. The photography of the right eye after 2 weeks from the removal of larvae and treatment.

[7-9] It is important to exclude and keep in mind the tick, which can cause serious diseases such as Crimean–Congo hemorrhagic fever in the differential diagnosis.

The focus of this discussion revolves around a 57-year-old female patient who experienced an allergic reaction due to what was initially believed to be a tick attached to her eyelid. The identification of the Polish cochineal larva, instead of a tick, as the cause of the allergic reaction is not only surprising but also highlights a rare intersection of entomology and clinical medicine. This case emphasizes the importance of accurate diagnosis and the awareness of clinicians regarding the diversity of arthropods that can affect human health beyond the commonly recognized pests. The incident underscores the potential for misidentification of insects in medical settings, a concern that can lead to incorrect treatments or unnecessary interventions. The similarities in appearance between ticks and the Polish cochineal larvae underlie the diagnostic error, raising questions about the need for improved training or resources for health-care professionals in endemic areas.

The allergic reaction experienced by the patient adds to the body of evidence on the variety of insects capable of causing significant health issues. While the literature extensively documents allergic reactions to common pests such as bees, wasps, and ticks, this case expands our understanding to include the Polish cochineal, an insect not typically associated with direct human health impacts.

Conclusion

Polish cochineal can cause an allergic reaction to the eye and adnexa and should be kept in mind in the differential diagnosis of tick infestation. Further, we want to mark the unpredictable ways in which human health can be intertwined with the natural world, highlighting the necessity for ongoing vigilance in the face of such challenges.

Informed Consent: Written informed consent was obtained from the patient for the publication of the case report.

Peer-review: Externally peer-reviewed.

Authorship Contributions: Concept: M.C., M.B.; Design; M.C., M.B.; Supervision: M.B.; Resource: M.C.; Materials: M.C.; Data collection and/or processing: M.C.; Analysis and/or Interpretation: M.C., M.B.; Literature Search: M.C., M.B.; Writing: M.C., M.B.; Critical Reviews: M.C., M.B.

Conflict of Interest: None declared.

Use of AI for Writing Assistance: Not declared.

Financial Disclosure: The authors declared that this study received no financial support.

References

1. Cooksey CJ. The red insect dyes: Carminic, kermesic and laccaic acids and their derivatives. Biotech Histochem 2019;94:100–7.

2. Serrano A, van den Doel A, van Bommel M, Hallett J, Joosten I, van den Berg KJ. Investigation of crimson-dyed fibres for a new approach on the characterization of cochineal and kermes dyes in historical textiles. Anal Chim Acta 2015;897:116–27.
3. Lech K, Jarosz M. Identification of Polish cochineal (Porphyrophora polonica L.) in historical textiles by high-performance liquid chromatography coupled with spectrophotometric and tandem mass spectrometric detection. Anal Bioanal Chem 2016;408:3349–58. [CrossRef]
4. Sadowska B, Sztormowska M, Gawinowska M, Chełmińska M. Carmine allergy in urticaria patients. Postepy Dermatol Alergol 2022;39:94–100. [CrossRef]
5. Ohgiya Y, Arakawa F, Akiyama H, Yoshioka Y, Hayashi Y, Sakai S, et al. Molecular cloning, expression, and characterization of a major 38-kd cochineal allergen. J Allergy Clin Immunol 2009;123:1157–62.e1–4. [CrossRef]
6. Katada Y, Harada Y, Azuma N, Hashimoto J, Saeki Y, Tanaka T. 494 Skin sensitization to carmine before onset of systemic allergy to ingested carmine. World Allergy Organ J 2012;5:S174.
7. Celebi AR, Orkun O. A rare case of tick infestation of the eyelid: Case report and literature review. Rev Bras Oftalmol 2016;75:144–6. [CrossRef]
8. Liolios V, Goldsmith C. Tick infestation on the lower eyelid: A case report. Cases J 2009;2:9073. [CrossRef]
9. Uzun A, Gök M, İşcanlı MD. Tick infestation of eyelid: Two case reports. Turk J Ophthalmol 2016;46:248–50. [CrossRef]