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Infestation of eyelashes by *Pediculus humanus capitis* (family: pediculidae): a case report

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Abstract

Background This case report describes a rare instance of *Pediculus humanus capitis* infestation affecting the eyelashes of a 10-year-old boy, notable for its ocular implications and unique diagnostic challenges.

Case presentation In November 2023, a 10-year-old Iranian boy from East Azerbaijan Province, northwest Iran, presented to the ophthalmologist with symptoms that included itching, eyelash adhesions, redness, and swelling around the eyes, along with small yellow spots on the eyelashes. The ophthalmological examination revealed no visual defects. An eyelash sample collected for analysis confirmed the presence of lice eggs and nymphs; lice were also found on the scalp. The treatment included tetracycline ointment. By the third day, the nymphs had been eradicated, but lice eggs remained. The remaining lice eggs were subsequently removed using forceps.

Conclusions This case underscores the importance of considering parasitic infestations in patients with ocular symptoms and highlights the associated public health and hygiene implications.

Keywords Eyelash, Infestation, Head lice, Case report

Background

Pediculosis refers to an infestation with the human head or body louse, *Pediculus humanus*, which comprises two subspecies: the head louse (*P. humanus capitis*) and the body louse (*P. humanus humanus*). These ectoparasites exclusively infest humans. Recent molecular data indicate that the two subspecies are ecotypes of the same species, with continuous evolutionary processes occurring between these populations. [1].

The eggs of head lice, also known as nits, are laid by adult female lice and are often mistaken for dandruff due to their small size. They take about a week to hatch. Nymphs, which hatch from the eggs, look like smaller adult lice and mature into adults after about 7 days. Adult lice are about the size of a sesame seed, live up to 30 days, and need to feed on blood multiple times daily.

Head lice infestations are common among preschool- and elementary-age children and may cause a tickling feeling, itching, and irritability. Body lice can transmit diseases such as epidemic typhus and trench fever.

The presence of *Pthirus pubis* in eyelashes has been reported in several cases, infestation with *Pediculus capitis* is rare [3–6], typically on the scalp. Head lice generally survive for less than 24 hours away from the scalp, and their nits cannot hatch at temperatures lower than those found near the scalp. Transmission occurs predominantly through direct contact with infested individuals, particularly head-to-head contact. Indirect transmission

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through personal items, such as combs, brushes, and hats, is less likely, as lice found on these items are often dead or injured [7]. Infestation of eyelashes and eyebrows can lead to significant ocular issues, including inflammation, burning, itching, and redness. It may also increase the risk of eye infections such as keratitis or conjunctivitis. Thus, maintaining hygiene of the eyelashes and eyebrows and preventing lice contamination is crucial for protecting eye health [8, 9]. This article reports a case of eyelash infestation with head lice eggs.

Case presentation

In November 2023, a 10-year-old Iranian boy from East Azerbaijan Province, northwest Iran, visited the ophthalmologist with the symptoms of itching, eyelash adhesions, redness, swelling around the eyes, and small spots on the eyelashes. The ophthalmological examination revealed no visual defects or eye damage, leading to suspicion of foreign parasites contaminating the eyelashes. The case was referred to an entomologist at the Infectious and Tropical Diseases Research Center of Tabriz University of Medical Sciences for definitive diagnosis.

A sample of the child's eyelashes was collected using sterile tweezers, confirming the presence of lice eggs (Fig. 1) and nymphs of the louse under a stereomicroscope. Further evaluation revealed adult lice of *Pediculus humanus capitis* and their eggs on the child's scalp. The patient had no significant medical history and no known family history of lice infestations. Though its effect may be limited until all lice are removed, 1% permethrin shampoo is usually effective in killing lice. We acknowledged the risk of eye irritation from its surfactants and solvents, and thus recommend cautious application. Petroleum jelly alone was considered sufficient for treating the infestation.

By the third day of evaluation, the nymphs were completely eradicated; however, lice eggs remained on the eyelashes in high density. To address this, vitamin A eye ointment was used for lubrication of the eyelashes, and a 20× magnifying glass with a light was utilized to observe the lice eggs. Under the magnifier, individual lice eggs were mechanically removed from the eyelashes using forceps. We did not conduct a direct comparison between vitamin A ointment and petroleum jelly; our observations were based on clinical experience. At the follow-up

Fig. 1 **A** Infestation of eyelashes with lice eggs. **B** A close-up of a louse egg removed from the eyelash

visit tow weeks later, the patient reported complete remission of symptoms with no signs of recurrent infestation (Fig. 2).

Discussion and conclusions

Lice infestations, particularly in sensitive areas such as the eye, can lead to various complications primarily due to irritation and secondary infections they provoke. The presence of lice, like pubic lice (*Pthirus pubis*), can result in conditions such as blepharoconjunctivitis, characterized by inflammation of the eyelids and conjunctiva, often arising from scratching and irritation [9, 10]. This irritation can create an entry points for bacteria, leading to secondary infections.

Although lice infestations can result in significant complications, such as secondary infections and inflammation, they are typically manageable with timely and appropriate treatment options. However, the psychosocial impact and stigma associated with lice can exacerbate the situation, leading to significant distress for affected individuals. Head lice infestations often lead to social isolation, anxiety, and embarrassment [11, 12]. Those affected may experience fear, stigma, and victimization, disrupting family dynamics and academic performance. The psychological impact can extend to self-blame and confusion [12]. Furthermore, lice infestations can have economic implications and cause physical discomfort [12, 13].

Lice infestation of the eyelashes is a rare ocular condition that can be easily misdiagnosed [4]. The life cycle of these parasites includes eggs (nits), nymphs, and adults, with females producing three to four eggs daily [14]. Nits are firmly cemented to the base of eyelashes by female lice [15, 16]. Adult lice feed on human blood multiple times a day, causing itching, burning sensations, and moderate pain [4, 14]. Other symptoms may include blepharitis, conjunctivitis, and marginal keratitis [15]. The parasites' semitransparent bodies and deep burrowing in the lid margin can make detection challenging [15]. Diagnosis is typically made through careful slit lamp examination, revealing lice and nits attached to eyelashes [4, 16].

Misdiagnosis of head lice infection of the eyelashes as common blepharitis and conjunctivitis could lead to prolonged pain and potential vision issues. Symptoms include itching, redness, and crusting of the eyelashes [17]. Treatment options include mechanical removal of lice and nits, application of pediculicides such as yellow mercuric oxide ointment, and, in some cases, pilocarpine gel [17–19]. Clinicians should remain vigilant in diagnosing these parasitic infections, as they can easily be mistaken for other eye conditions [3, 16]. Our study highlights the possibility of the patient being infested with lice co-infection of the child's eyelashes and scalp hair. Therefore, proper supervision of the hygiene is necessary. This case emphasizes the importance of considering parasitic

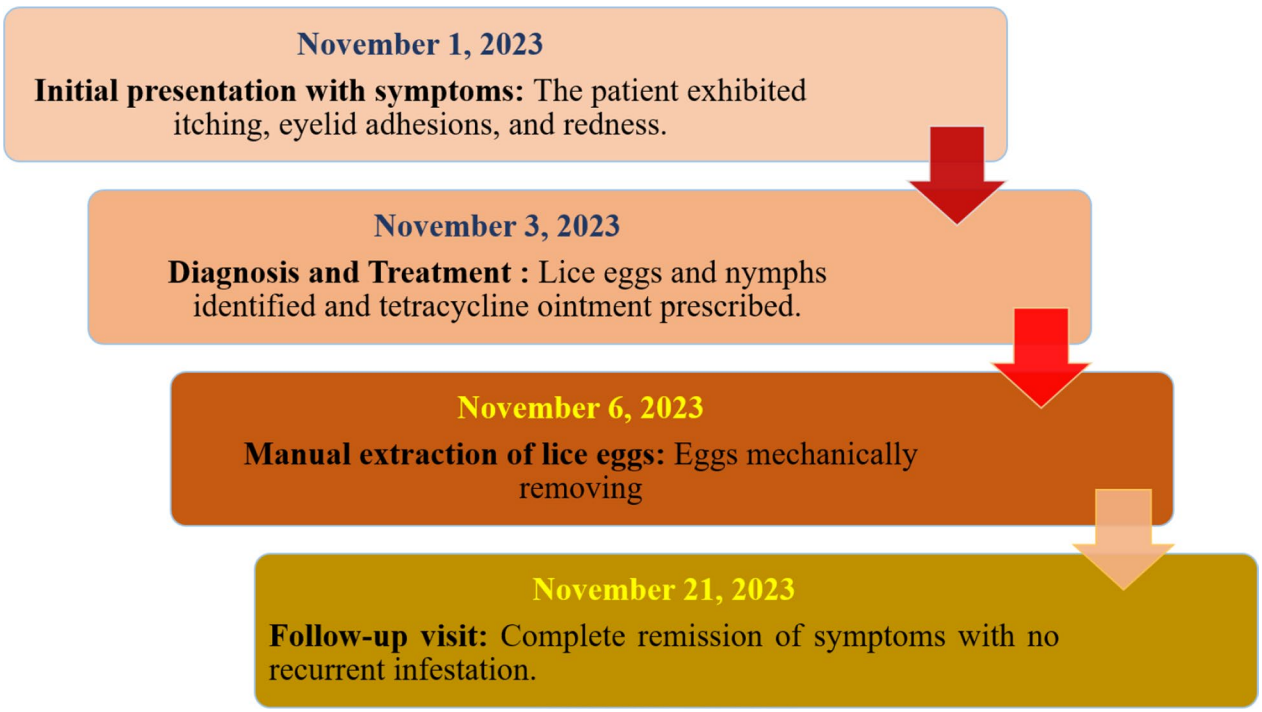

Fig. 2 Timeline of a case management of a *Pediculus humanus capitis* infestation on eyelashes

infestations in patients with ocular symptoms, underlining significant public health and hygiene implications.

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Author contributions
Madineh Abbasi conducted the original idea, laboratory study, and article writing. Saideh Yousefi revised the manuscript.

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Availability of data and materials
All data on which this article is based are included within the article.

Declarations

Ethics approval and consent to participate
Consent for publication was obtained from the patient and their parents. No personal identifying information is included in this report. The ethics committee at Tabriz University of Medical Sciences (Ethics Code: IR.TBZMED.REC.1402.1005) approved this protocol.

Consent for publication
Written informed consent was obtained from the patient's legal guardian for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

Competing interests
The authors declare that they have no competing interests.

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