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Case Report

Treatment of Pediculosis Ciliaris in Atopic Patient with Cleaning and Antiseptic Device Containing Terpinen-4-Olo, PEG-8, Polysorbate 80, Poloxamer 184, And Macrogol 6 Glycerol Caprylocaprate (Blephademodex® Wipes): Case Report and Literature Review

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Abstract

We present a case of ciliary pediculosis in a patient suffering from allergy to mercuric oxide ointment and other drugs, treated with a daily eyelid wipe containing Terpinen-4-ol, PEG-8, Polysorbate 80, Poloxamer 184 and Macrogol 6 glycerol caprylocaprate. Findings and review of the literature on eyelid pediculosis infestations' etiology and currently available treatment options are reported.

Keywords: Ciliary pediculosis; Eyelashes infestation; Terpinen-4-ol treatment; Phthiriasis palpebrarum; Phthirus pubis infestation

Introduction

Pediculosis is an ecoparasitosis caused by hematophagous wingless insects (lice) of the gender Anoplura [1]. There are approximately three hundred species of sucking lice, all of which are parasitic to mammals; only three genera of these, Pediculus humanus capitis, Pediculus humanus corporis, and Pediculosis pubis (also known as phthiriasis pubis) are commonly parasitic to humans, to which they can transmit impetigo, trachoma, cholera, typhus [2]. These infestations are commonly related to poor personal hygiene; however, lice are frequently a problem among the urban populations [3]. The typical presentation includes excoriated erythematous papules, itching, and regional lymphadenopathy [4]. Eggs and nits are firmly attached, whereas pseudonits (seen with scaling scalp disorders) are relatively mobile [5]. Combing to remove nits may have limited effectiveness, but is commonly recommended [6]. Complications include severe diseases associated with Borrelia recurrentis, Bartonella quintana and Rickettsia prowazekii transmission [7]. The Pthirus pubis is a 0.8 to 1.2 mm long, translucent parasite; Pediculus humanus capitis and Pediculus humanus corporis are very similar: they have an ovoid shape, and are 3-4 mm long; the color varies from light brown to light grey [8]. Four of their six legs terminate in prominent crab-like claws, which are suited to grasp pubic and other body hairs. The life span of the female crab louse is three to four weeks, during which time she lays a maximum of three eggs (nits) per day [9]. The eggs are cemented firmly to the base of a hair and hatch after six to eight days usually transmitted during sexual contact [10]; transmission via contact with clothing, towels, or linen, may also occur but is thought to be less common [11].

Acquisition of Phthirus pubis from a toilet seat is unlikely because the organism gravitates toward warm environments and is not adapted to crawling on smooth surfaces [12]. Pediculosis pubis can extend beyond the pubic area to involve other areas of the body, including the eyelashes (also known as pediculosis ciliaris and phthiriasis palpebrarum) [13].

The eyelashes and peripheral scalp are in fact frequent sites of involvement by Pediculus pubis in children and adults [14]. In view of the sharp increase in the frequency of pediculosis worldwide, more cases of ocular involvement can be expected. Lid margin infestation with P. pubis is accompanied by conjunctivitis and edema, which may lead to corneal epithelial keratitis [15]. On slit-lamp examination, patients typically present with unilateral or bilateral blepharoconjunctivitis, with intense itching of the eyelid margins, red watery eyes, adult lice (1-1.5 mm long), and greyish-white, cigar-shaped eggs (called nits) shells attached near the base of the eyelashes [16, 26]. The empty shells remain after hatching; the reddish-brown deposits at the base of the eyelashes are a mixture of louse feces and blood of the host following louse bites [1, 16]. Itching is the most frequent symptom; rare symptoms are burning, pain and fever [28]. Differential diagnosis includes anterior blepharitis, in which the nits may be confused with eyelash debris; Demodex mites are much smaller than lice (0.1-0.4 mm long) and are not usually seen outside the hair follicle [24]. With imprecise observation and without adequate magnification, the clinical picture can be confused with an allergic or infectious conjunctivitis or with eczema affecting the skin of the lid [21]. A louse and the ova can be removed from the patient for diagnostic purposes [16]. A dermatological or gynecological consultation is required as this is usually a sexually transmitted disease [21]. The goal of the therapy is to get rid of the lice and the eggs. All contacts must be treated simultaneously. Many treatment options have been proposed to eradicate eyelid and eyelash infestation. Most of these preparations are toxic to the ocular surface and should therefore only be used by experienced professionals [26].

We herein present a case of ciliary pediculosis in a patient affected by allergy to various antigens, drugs and heavy metals, treated with lozenges and frequent cleansing with a daily eyelid wipe containing Terpinen-4-ol, PEG-8, Polysorbate 80, Poloxamer 184 and Macrogol 6 glycerol caprylocaprate. Furthermore, we review the therapeutic options currently used in this infestation based on the most recent data from the literature.

Case

56-year-old female, caregiver of a mentally disable person, complaining itching and irritation in both eyes for two weeks. The systemic anamnesis showed only atopy, with positive patch tests for Nickel and Chromium, and chronic gastritis, under treatment with anti-H2 antihistamines. Visual acuity was 20/20 OU, anterior and posterior segment healthy. It was noted that she had red eyelid margins and a brownish discoloration at the base of her eyelashes. The biomicroscopic examination showed numerous mobile nits and parasites on the eyelashes bilaterally (Figure 1); under a higher magnification evaluation, the parasites were shown to belong to the genus Phthirus (Figure 2). The patient was prescribed a treatment with galenical ophthalmic ointment with 1% mercuric oxide three times a day for 14 days. We also explained to the patient that the ointment had to be rubbed thoroughly into the eyelashes and eyelid margins for at least one minute to introduce it into the hair follicles. A full anamnestic investigation was conducted and the patient was referred to the dermatologist to rule out lice infestation of other areas of the body.

In the next day, the patient reported that after the first application of the ointment she had felt burning and intense itching, associated with hyperemia and swelling of the eyelid margin, so much so that its application was immediately stopped. Considering the history of allergy to many antigens and heavy metals, only the application of cleaning and antiseptic device containing Terpinen-4-olo, PEG-8, Polysorbate 80, Poloxamer 184, and Macrogol 6 glycerol caprylocaprate (Blephademodex(R)) was prescribed; the patient was recommended to apply a compress for 10 minutes and subsequent gentle scrab of the eyelid margin from the inner canthus outwards every 4 hours.

Since the eggs hatched to release the lice after about five days, we decided on a 15-day treatment regimen. The patient was visited every 5 days until the disappearance of the parasite and its eggs and again two months after the start of the therapy. At each follow-up visit, the patient was also carefully screened for known side effects of the treatment. Involvement of other parts of the body was not found. Resolution of the blepharoconjunctivitis occurred at the 10-day follow-up visit. However, some viable ovules remained attached to the eyelashes. Five days later the patient remained asymptomatic, with the eggs hatched on his eyelashes. It was decided to extend the treatment for another 5 days. Follow-up 20 days after initiation of treatment and two months later revealed an asymptomatic patient with no ovules on the eyelashes (Figure 3). No side effects to the device have been reported by the patient or noted during eye exams performed.

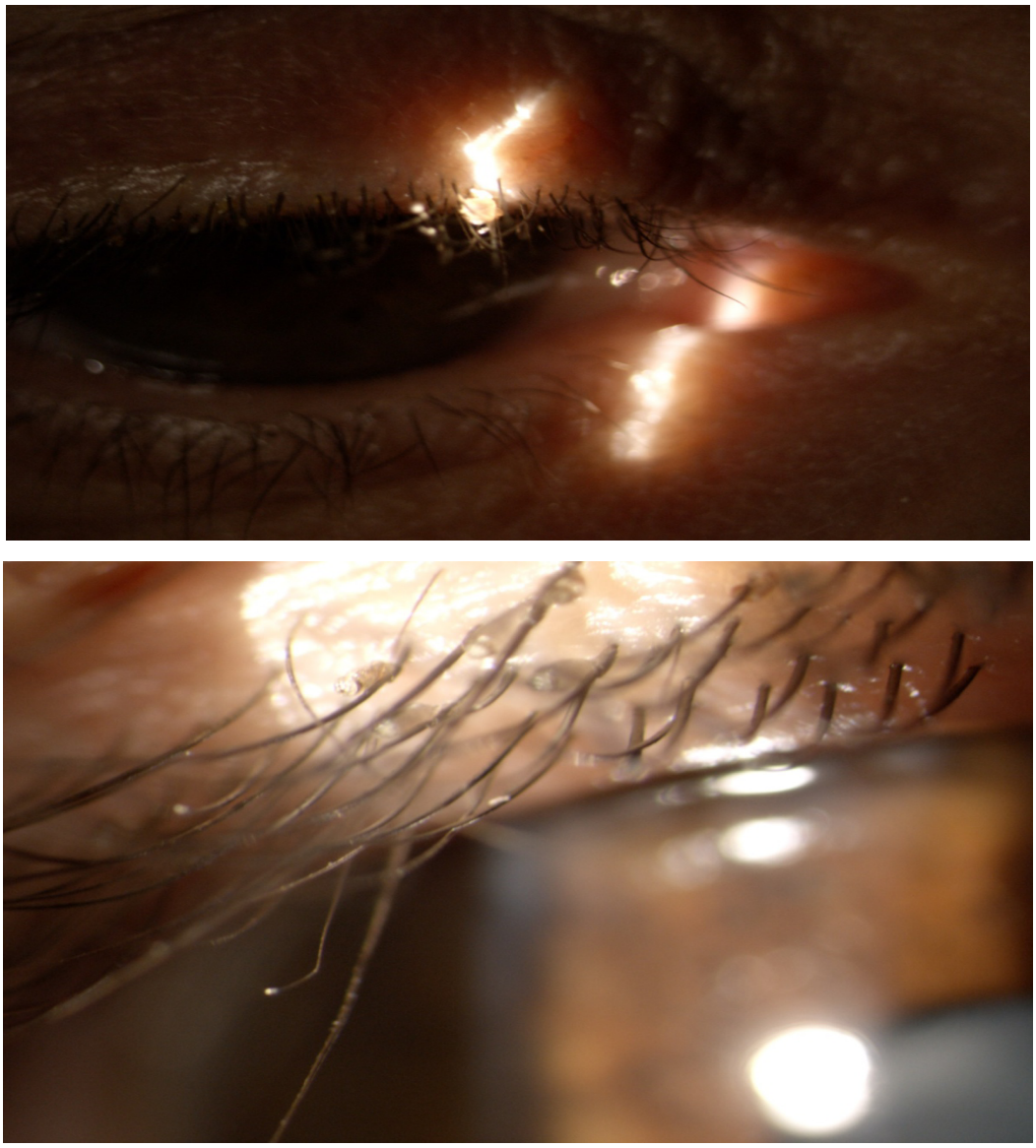

Figure 1 (a, b): Biomicroscopic examination of the eyelashes of the right **(a)** and left **(b)** eye: numerous mobile units are observed.

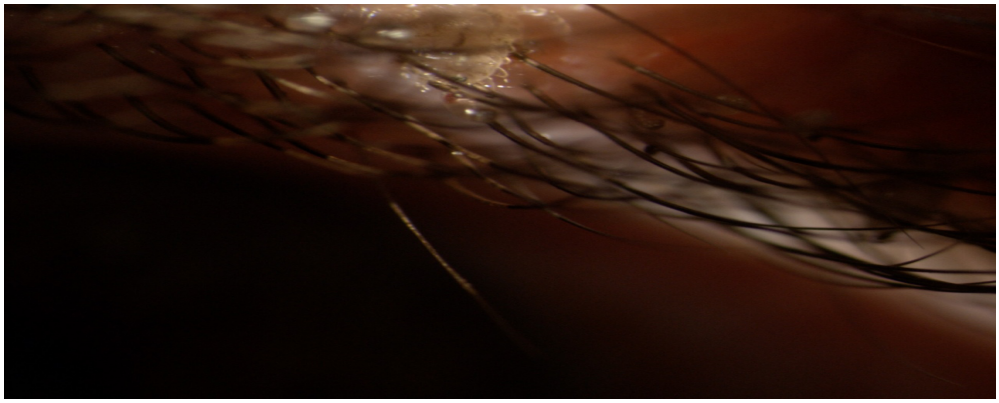

Figure 2: Biomicroscopic examination at higher magnification: parasites belonging to the genus Phthirus are highlighted.

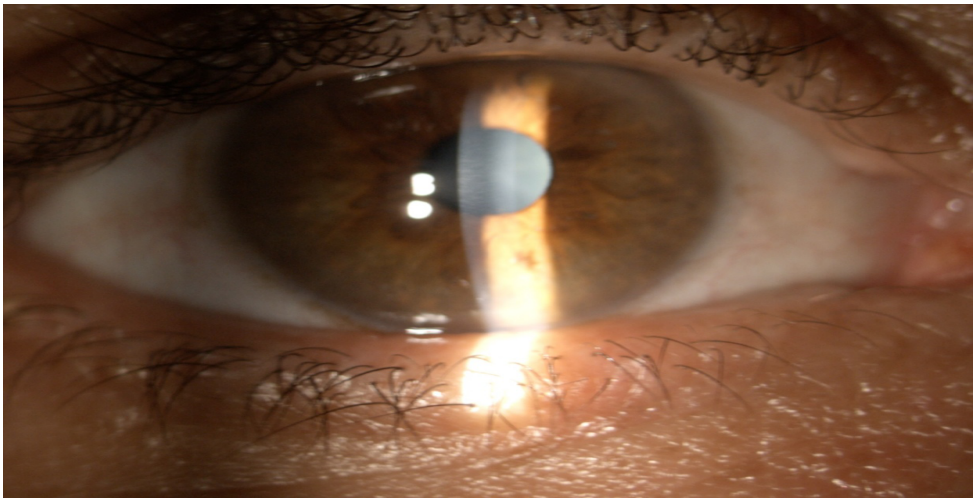

Figure 3 (a, b): At the checkup 20 days after the start of the treatment, no parasites or ovules were found on the eyelashes, nor signs of inflammation on the eyelid margin.

Discussion

Intuitively we expect Pediculus capitis to be the offending parasite and not pubic louse, since the latter's usual site of infestation is away from the eyelashes [4]. However, head louse, which is frequently seen in childhood, is usually confined to the scalp, and involvement of the ocular region is extremely rare. On the other hand, pubic louse is the most common cause of eyelash pediculosis [8]. The pubic louse dies quickly when separated from its host, its transmission from person to person usually occurs by sexual contact. The pubic area is most commonly affected, but an infected person can transfer the organism from one hairy area to another resulting in infestation of underarm hair, beard, eyebrows and eyelashes [12]. Phtyriasis palpebrarum occurs more often in children, who are usually infested by the direct passage of lice from the axillary or chest hair of parents, educators or babysitters with whom they come into contact, while it is rare in adults [8, 12]. In the present case, the patient, who works in a care facility for non self-sufficient people, was infested with the parasite through a towel used by a disabled person suffering from pubic pediculosis.

There are various options for the treatment of pediculosis ciliaris. Home remedies for lice are largely ineffective, but environmental modifications such as vacuuming, laundering (at a temperature ≥149°F), 2-week fomite isolation, and close-contact avoidance may prevent reinfestation [9, 17, 27]. Despite the development of some drug resistance, permethrin 1% and synergized pyrethrins (pyrethrins plus piperonyl butoxide) are first-line agents for head lice [25]. Permethrin 1% lotion can be applied to the eyelashes for 10 minutes with the eyes closed; such preparations are toxic to the ocular surface therefore should only be used by experienced professionals: great care is needed so that only the lid tissue is treated, and subsequently the lid margins should be thoroughly cleaned with dry cotton swabs to remove residual permethrin [14]. Petrolatum is also effective in eradicating head lice, but does not destroy the eggs; it should be applied twice a day for 10 days [5]. In refractory cases, topical benzyl alcohol 5%, spinosad 0.9%, ivermectin 0.5%, or US formulated malathion 0.5% are recommended treatments [18]. Tea tree oil, Kerosene, Lindane lotion and oral Ivermectin therapy have also been used [3, 22]. Lindane 1% is not recommended due to neurotoxicity and resistance 9. Promising new therapies include dimethicone, isopropyl myristate, and Louse-Buster desiccation [7]. Non-ovicidal treatments require readministration after eggs hatch at 7-10 days, and ovicidal treatments (Malathion, spinosad, and ivermectin) should also be repeated if live lice are observed [26].

Patients with P. pubis infestation should be monitored promptly; if the infestation has not been eradicated 7-10 days after initiation of treatment, other therapy should be initiated [8]. Experts recommend clothing, towels and bedding used by the patient should be machine washed (with water at least 55°C) and dry on the hot cycle for 5-10 minutes. Items that cannot washed in this way should be dry cleaned or placed in a sealed plastic bag for two weeks [19].

Many authors have demonstrated that 1% mercuric oxide ointment is a safe and effective treatment for phthiriasis palpebrarum and recommend it as the treatment of choice due to its good local tolerability, unlike the products used in other parts of the body [2]. Yellow mercury oxide can be used after moist compresses of a 4% boric acid solution applied three times a day directly to the eyelids and lashes. The ova can be removed with fine tweezers [12]. Known side effects of 1% yellow oxide of mercury ointment include damage to the eyelid, conjunctiva, and Descemet's membrane, and lens opacification and discoloration, as well as irritation and conjunctivitis [1]; none of the described side effects have been detected in other more recent studies [2]. Anticholinesterase agents are reported to be as effective as 1% yellow mercuric oxide, but they do not affect the nits themselves; also, when applied in the standard concentrations used in the treatment of glaucoma unwanted ocular symptoms may be prohibitive.

In this case, the patient showed an allergic reaction to the prescribed yellow mercuric oxide ointment. In fear of new allergic reactions, a gentle treatment with a device containing Terpinen-4-olo and other components, commonly used for cleaning and disinfecting the eyelids, has been proposed. Terpinen-4-ol is generally used in eyelid infestations by Demodex, but the treatment of pediculosis with this product is rarely reported in the literature, only in a few cases, in association with vaseline-based ointments [22-28].

The encouraging results and the excellent tolerability of the treatment, detected at the first control examination of the patient, suggested its continuation; the subsequent follow-up showed the complete eradication of the parasite after 20 days of therapy with this therapeutic device alone. The good result obtained suggests its use in cases of pthiriasis ciliaris, in association with other products or even as a sole aid, in atopic and sensitive subjects.

Conclusion

Pediculosis of the eyelashes is an insidious pathology with a worsening course, due to late diagnosis or inaccurate follow up; the usual treatments consist of substances which are sometimes not well tolerated, due to toxicity or allergenic effect. In the examined case , in which there was an intolerance to 1% yellow mercuric oxide ointment, a delicate approach with cleaning and antiseptic device containing Terpinen-4-olo and other components (Blephademodex(R)) represented an effective alternative, without side effects.

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