

## Case Report

# Phthiriasis palpebrarum effectively treated with tea tree oil

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**Abstract:** Phthiriasis palpebrarum, also known as crab lice, is a rare eyelash infestation by *Pthirus pubis* that is often misdiagnosed as common blepharitis, and thus mistreated. Treatment of Phthiriasis palpebrarum is widely variable. Tea tree oil is an essential oil with broad-spectrum anti-microbial therapeutic effects. Notably, however, the role of this agent in Phthiriasis palpebrarum management is unclear. The current article reports a case of phthiriasis palpebrarum effectively treated with tea tree oil.

**Keywords:** Phthiriasis palpebrarum, blepharitis, tea tree oil, pthirus pubis, biomicroscopy

### Introduction

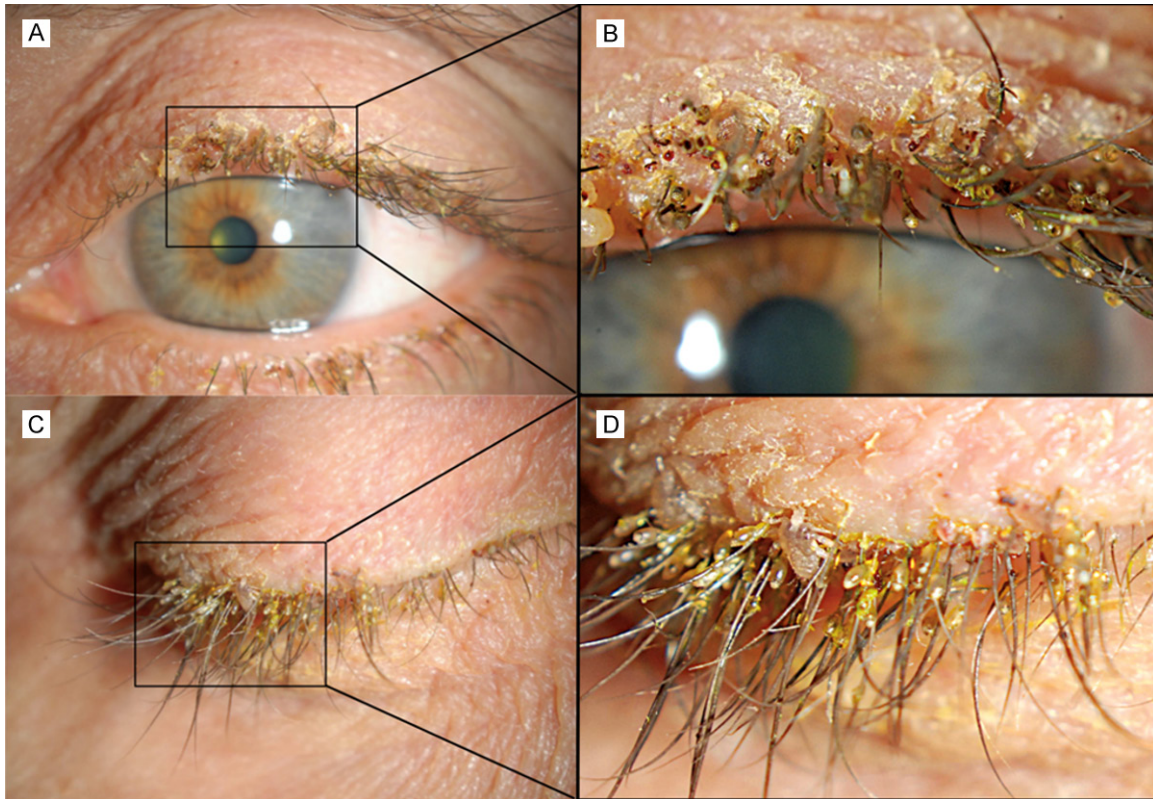
Phthiriasis palpebrarum is a rare eyelash ectoparasitosis caused by *Pthirus pubis*, also known as crab lice [1]. Notably, this potentially serious condition is often mistaken for blepharitis, a common inflammatory disorder of the eyelids, upon initial evaluation by the naked eye. The diagnostic standard for phthiriasis palpebrarum involves slit lamp examination, a diagnostic tool that combines a microscope with a high-power light source enabling a magnified and detailed ocular examination. Results from slit lamp examination reveal adult lice and nits on the eyelashes. This can be followed by confirmatory microscopic parasitological evaluation. Like blepharitis, typical clinical features of phthiriasis palpebrarum infestation include itchy eyes, burning sensation, eyelash seborrhea accumulation, and conjunctival inflammation. Nevertheless, the management of phthiriasis palpebrarum differs significantly from that of blepharitis [2]. In addition, therapy of phthiriasis palpebrarum is challenging and controversial with variable efficacy. Treatment options may include mechanical removal, topical or oral agents as well as phototherapy. Tea tree oil is an essential oil with a broad-spectrum therapeutic effect in combating blepharitis. Notably, however, the efficacy of phthiriasis palpebrarum treatment with tea tree oil is unclear. The aim of the current article is to report a case

of phthiriasis palpebrarum resembling blepharitis that was detected by slit lamp biomicroscopy and successfully treated with a combined therapeutic approach including tea tree oil.

### Case presentation

A 58-year-old woman presented to ophthalmology clinic with irritation of both eyes. The patient reported living in poverty with no history of sexually transmitted diseases. Gross examination showed bilateral crust-like deposits along the eyelid margins (**Figure 1A**) resembling blepharitis. Results from slit lamp biomicroscopy were significant for bloody crusts and translucent nits (eggs) with empty shells (ruptured egg sacs) appearing as oval, brownish, opalescent pearls (**Figure 1B**). Further examination of the enclosed eyelid (**Figure 1C**) revealed semi-transparent moving organisms anchored to the superior palpebra (**Figure 1D**) suggestive of crab lice. Parasitological evaluation of trimmed eyelashes by high-magnification compound light microscopy revealed adult nits of *Pthirus pubis*, confirming the diagnosis of phthiriasis palpebrarum. This was based on characteristic morphological features of *Pthirus pubis* including an approximate length of 1.5 to 2 mm and distinctive nearly round thorax. There was no microbiological evidence of *Demodex*. The patient was treated with topical ointment and a lid hygiene regimen including warm compresses

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**Figure 1.** Depicts bilateral crust-like deposits along the eyelid margins (A) resembling blepharitis (A). Slit lamp bi-microscopy revealed bloody crusts and translucent nits (eggs) with empty shells (ruptured egg sacs) appearing as oval, brownish, opalescent pearls (B). Further examination of the closed eyelid (C) showed semi-transparent moving organisms anchored to the superior palpebra (D).

and lid scrubs with 10% tea tree oil of both eyes twice daily. The patient was asymptomatic and demonstrated significant clinical improvement one month later. Post-treatment slit lamp bi-microscopic examination of the eyelids showed no evidence of recurrent lice infestation.

### Discussion

We report a case of phthiriasis palpebrarum resembling blepharitis on gross external examination. Notably, further examination with slit lamp biomicroscopy revealed *Pthirus pubis* infestation. Clinical features of phthiriasis palpebrarum infestation include itchy eyes, burning sensation, and conjunctival inflammation. Not surprisingly, phthiriasis palpebrarum is commonly misdiagnosed with blepharitis given similar symptoms and higher prevalence [2-4].

Since infestation is rare and these organisms are translucent, they may not be visible to the naked eye and can be easily overlooked. Therefore, microscopic examination is needed to make the clinical diagnosis of phthiriasis palpe-

brarum [4, 5]. Several cases of phthiriasis palpebrarum initially misdiagnosed with blepharitis, and thus, mistreated without clinical improvement have been reported [3-12]. Dohvoma et al. reported a case of a 6-year-old girl with a 2-month history of blepharitis unresponsive to topical antibiotics [5]. Jiang and colleagues documented a case atypical phthiriasis palpebrarum mimicking blepharitis [3]. Khan and colleagues reported a case series of five patients with phthiriasis palpebrarum that presented with itching, eyelid hyperemia, and skin excoriation initially misdiagnosed for blepharitis [8]. Wu et al. described a 63-year-old woman presenting with phthiriasis palpebrarum, which was initially misdiagnosed as anterior blepharitis. The patient had a two-month history of recurrent itching and burning sensations and moderate pain without symptomatic improvement on antibiotic and corticosteroid eye drops [4]. In these cases, the initial misdiagnosis of blepharitis was largely prompted from minimal to no response to initial therapy and subsequently revised as well

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as appropriately treated following slit lamp biomicroscopy.

Treatment of phthiriasis palpebrarum is challenging and without clear consensus. Various approaches have been reported including eyelash cutting or epilation to mechanically remove the lice and nits [13, 14]. Although mechanical removal is effective, it is a time-consuming process. Other reports have used variable topical agents including petroleum jelly, 20% fluorescein, 4% pilocarpine, 1% yellow mercuric oxide, 0.3% tobramycin, lindane, permethrin, and pyrethrins [6, 15, 16]. Oral ivermectin and argon laser phototherapy to destroy the parasites have also been effectively used [17].

Our patient was treated with tea tree oil and exhibited significant clinical improvement without recurrence. Tea tree oil, a natural oil derived from *Melaleuca alternifolia* leaves, has broad spectrum anti-microbial and anti-inflammatory properties that is reportedly effective in treating *Demodex*-related meibomian gland dysfunction. In addition, the rapid response soothing effects of tea tree oil contribute to its efficacy in relieving symptoms and improving compliance [18-21]. Treatment of phthiriasis palpebrarum with tea tree oil has rarely been documented. Park and colleagues report a case of phthiriasis palpebrarum in a 12-month-old boy successfully treated with tea tree oil [22]. In addition, Huo et al. describe a case of *Phthirus pubis* and *Demodex* co-infestation of the eyelids treated with tea tree oil [23]. In contrast to these reports, our case involves tea tree oil treatment in an adult patient and without *Demodex* co-infestation.

In conclusion, we caution practitioners to have a higher index of suspicion for phthiriasis palpebrarum in the differential diagnosis of blepharitis. Slit lamp examination of the eyelashes for the presence of lice and eggs should be performed and treatment incorporating tea tree oil should be considered. The current article is limited by the usual nature of a case report. Future studies using tea tree oil are necessary to further elucidate its therapeutic efficacy and patient tolerance for treating phthiriasis palpebrarum.

### Disclosure of conflict of interest

None.

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