



## Original Research Article

## Medical management of pediculosis palpebrarum

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## ABSTRACT

**Aim:** To know the efficacy of only conservative management without manual removal of adult parasite in treatment of pediculosis palpebrarum.**Material and Methods:** Seventeen patients with pediculosis palpebrarum underwent health education on personal hygiene, avoid overcrowding, counseling and psychotherapy. Deparasitisation of associated axillary and pubic area with Permethrin 1% cream application two courses at weeks gap. Washing clothes and linen in hot water. Face wash with shampoo lotion and simultaneously rubbing of the eye for 1-2 minutes thrice daily. Topically Antibiotic - steroid drops and ointment thrice daily for 6 weeks. No manual removal of adult parasite, epilation or trimming of the eye lashes was done.**Results:** The mean age of patient is 19.5 +/- 13.4 years. Male: Female ratio was 10:7. Mean duration of symptom is 13.4 +/- 6.6 weeks. Commonest presentation was itching in all patients. 82.3% (14/17) patients had bilateral involvement of both upper and lower lids with associated pubic and axillary area infestation. By 1<sup>st</sup> week all had resolution of symptoms and on 3<sup>rd</sup> week 82.3% (14/17) free from infestation. (3 dropout) only discomfort was transient blurring of vision due to eye ointment.**Conclusion:** Conservative management without manual removal of adult parasite is equally effective in treating pediculosis palpebrarum. Acceptable to children, anxious and non cooperative patients. It will avoid the discomfort to patients, complications of sedation and local side effects of topical parasitocidal agents. Only side effect was transient blurring of vision due to eye ointment.© This is an open access article distributed under the terms of the Creative Commons Attribution License (<https://creativecommons.org/licenses/by/4.0/>) which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

## 1. Introduction

Pediculosis palpebrarum also called as phthiriasis palpebrarum/ phthirus bulbi is an ectoparasitic infestation of the eye lashes caused by Phthirus pubis or crab louse. Phthirus pubis belongs to phylum arthropoda, class insect, family pediculidae, order phthiraptera and genus phthirus. This hominophilic, haematophagous parasite resembles the head and body louse except smaller in size. The body is broader than length resembling a crab. The adult parasite is grayish white color measuring 3 – 4 mm size, male slightly smaller than female. The exoskeleton body has head, thorax and abdomen with no wings. The thorax has 3

pairs of short, stout legs with strong claw like appendages helping the parasite to grasp hairs. The abdomen is more or less telescopic so that the first three abdominal spiracles (segments 3, 4 and 5) are almost in one transverse having gastrointestinal system and spiracles. These spiracle are connected to respiratory system. Life span of the lice is around 1 month having the stages of Egg–nits(ova) - adult. The female lays 7-10 eggs per day passing through three stages, nits (5-10 days), nymph (7-10 days) and adult (5 -10 days). The adult cannot survive for more than 1hr without the host. Although pubic hair is their main habitat, these lice are quite often found on axillary hairs, chest hairs, inguinal hairs, pubic hairs and perianal area.<sup>1-4</sup>

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The incidence of pediculosis pubis is 2-10% among human population<sup>3</sup> and < 0.1% of pediculosis pubis will have pediculosis palpebrarum.<sup>5</sup> Common among socioeconomically weaker population, people living in overcrowded places, having poor personal hygiene, sharing of common bed, linen, clothes and persons with deviated sexual activity. It can affect both sexes and all age group. Common presentation is repeated episodes of itching and some time cosmetic blemish.<sup>6-8</sup> Complications of pediculosis palpebrarum are chronic blepheroconjunctivitis,<sup>1,3,9,10</sup> marginal keratitis,<sup>11</sup> cosmetic blemish and rarely Lice - vector born viral infections like thypus fever, trench fever and relapsing fever.<sup>3</sup> Mode of spread by hand to head transmission, sharing clothes, linen, beds, inner wears and shedded hairs. Also by normal and deviated by sexual contact.<sup>1,2,7</sup>

Even thou no standard treatment available for pediculosis palpebrarum most of the treatment are focused on 1. prevention of reinfestation to patients and transmission to others by avoiding crowded living condition, improved personal hygiene, counseling and health education.<sup>3,8</sup> 2. Reducing the load of infestation by, deparasitisation of associated infested body area with parasitocidal agents, manual removal of adult parasite (live or dead) by epilation of eye lashes or/and trimming of eye lashes.<sup>5,9,10,12</sup> 3. Local destruction of adult parasite and ova by chemical and mechanical modalities. Chemically by parasitocidal agents like Yellow mercuric oxide ointment 1%,<sup>8-10</sup> 5% permethrin cream,<sup>6</sup> diluted 5% povidone iodine lotion,<sup>13</sup> freshly prepared 20% fluorescein eye drops,<sup>14</sup> antibiotic ophthalmic ointment,<sup>5,11,12</sup> Ivermectin lotion 0.5% 2 applications at 10 days gap,<sup>4</sup> pilocarpine 4% eye gel/drop,<sup>15</sup> kerosene application,<sup>16</sup> physostigmine drops or ointment, botulinum toxin A solution<sup>17</sup> and Gama benzene hexachloride 1% cream.<sup>7</sup> Mechanically by application of Argon laser<sup>2</sup> and cryotherapy.<sup>18</sup> Oral use of Ivermectin 200µgm/kg 2 doses at 1 week interval<sup>19</sup> also beneficial. Most of the local drops/gel/lotion/ointment kills the parasite by affecting one or more vital systems of the parasite like respiratory, gastrointestinal, muscular and nervous system. Even the common protocol of treatment was hundred percent successful in most of the reported studies with following limitations. Manual removal of adult parasite in children and non cooperative patients was difficult to Ophthalmologist and painful to patients. GA/sedation related complications in children and economical burden to their parents. Cosmetic blemish in aesthetically concerned young patients following trimming/epilation of eye lashes. Known Systemic and ocular side effects of local and systemic parasitocidal agents.

During our routine practice one 5yrs old boy had pediculosis palpebrarum in right eye with reluctant blepheroconjunctivitis. Mechanical removal of adult lice, epilation of eyelashes or trimming of eye lashes was not

possible. Parents were not willing for GA or sedation because of heard complications of GA/sedation. He was managed with 1. preventive protocol of improved personal hygiene, avoiding over crowding, deparasitisation of infested associated body hairs, clothes, linen and bed. 2. Locally Conservative treatment; thrice daily face wash with baby shampoo and simultaneously rubbing of the closed eye lids with opposed ring and middle finger for 1-2 minutes 3. Locally antibiotic steroid eye drops and ointment three times daily. Within 2 weeks he was completely cured from blepheroconjunctivitis and lice infestation. This made us to follow this protocol to all patients visiting our outpatient department with pediculosis palpebrarum.

## 2. Material and Methods

This prospective, interventional study was taken in District hospital, Chamarajanagara in Karnataka state. This study was conducted from July 2017 to March 2020. Informed consent was taken from the patients above 18 years and from the surrogate parents of patients below 18 years. The protocol was approved by the review and ethics committee of the Hospital. The study had patients from Ophthalmology and Dermatology OPD.

All enrolled patients' demography and detailed history recorded. Comprehensive eye examination with bio microscopic examination of the eye lids for adult parasite, nits, blepheroconjunctivitis and Keratitis. Complete body examination to look for associated parasitic infestation of scalp hairs, axillary hairs, chest hairs, inguinal hairs, pubic and perianal hairs. counseling the patient, patients parents, hostel wardens or their attendants about the nature of the disease, mode of its spread, need for improvement in personal hygiene, avoiding over crowded living condition in family and hostel. Health education on importance of the rigid treatment schedule and follow up visits. In needed cases psychotherapy sessions and sessions on sex education.

Each patient underwent following treatment protocol.

### 2.1. Deparasitization

First day, application of shampoo to head (only in patients with associated pediculosis capitis infestation ), axillary area, chest area and pubic area leave for 30 minutes followed by massage of permethrin 1% cream ( Perlice, Encube Ethicals Pvt. Ltd, Ponda, Goa, India) leave for 10 minutes and warm water bath with normal bathing soap. This cycle to be repeated after 1 week.

Boiling the linen and clothes of all the members in water mixed with washing soda for 30 minutes followed by washing with any detergent soap/ powder for a week period.

### 2.2. Local treatment

Daily three times face wash with warm water and baby shampoo, while washing the face thorough massage over the

closed lid margins with opposed index and ring finger for 1-2 minutes. After drying the face instillation of one drop of Ofloxacin - dexamethosone eye drops ( Sunway India Pvt. Ltd Mumbai – India ) followed after 10 minutes with application of 1 inch length Ofloxacin - Betamethasone eye ointment ( Sunway India Pvt. Ltd - Mumbai – India ) in the lower fornix three times daily for a month.

All patient were advised to follow up on 1 week, 2 week and 4 week on outpatient basis. On Each visit patients are evaluated for resolution of symptoms, condition of the lids for blepheroconjunctivitis, number of adult lice, density of nits, and status of deparasitisation in other affected body areas. Any complications to medicines and development of new symptoms experienced by the patients are recorded. The result after 8 weeks of follow up are tabulated and analyzed by 2020 Statistical Software (2020). NCSS, LLC. Kaysville, Utah, USA, and displayed in mean with standard deviation (SD). The probability by single sample student 't; test and statistical significance with exact P value.

### 3. Result

There were 17 patients, the mean age of the patients is 19.8 +/- 13.4 years ranging from 5 to 46 years. Youngest patient is 5 years male and the eldest patient is 46 years old female. There were 58.8% (10/17) males and 41.2% (7/17) female patients. There were 35.3%(6 /17) patients below 12 years. The commonest symptom was recurrent itching and mild discomfort of eye lids. Additional symptom of cosmetic blemish was reported by 64.7% (11/17) patients (Parents of all six children and 5 adult female patients). The mean duration of symptoms was 13.0 ±6.6 weeks ranging from 3 weeks to 24 weeks. Among 17 patients 29.4% (5/17) patients were referred from dermatology department and all are above 18 yrs of age, 4 female and one male. There were 82.3% (14/17) patients who have been treated either from General practitioner or Ophthalmologist diagnosed as chronic blepharoconjunctivitis.

Bilateral involvement of upper and lower lid eye lashes seen in 82.3% (14/17) patients. Among these 14 patients 71.4% (10/14) patients had infestation of both axillary and pubic area and 28.6%(4/14) patients only pubic area. Unilateral infestation was seen in 17.6% (3/17) patients, all these 3 patients are children, only right eye was infested without axillary and pubic area infestation.

Density of adult parasite and nits were more in 23.5% (4/17) patients and all are adult patients ; 1 male and 3 female they were all referred from Dermatology department. These 4 patients also had densely infested axillary and pubic area with active sexual life. Associated pediculosis capitis was present in 35.3% (6/17) patients and these patients were < 18 years 4 males and 2 females. All these 4 patients are inmates in hostel or crowded family. One or two member of the family or inmates of these patients were also infested. Some patients also had history of sharing

the inner wears and deviated sexual activity.

All 17 patients reported for first follow up after 1 week. All had resolution of symptoms in the eye and body. On examination density of the adult parasite, nits were very much reduced in the lids, no signs of blepharitis and conjunctivitis. On general examination, number of adult parasite and nits in pubic and axillary area was also reduced by > 50%. The response was more in patients with high density involvement compare to lower density involvement. All 3 patients of unilateral right eye involvement were free from adult lice.

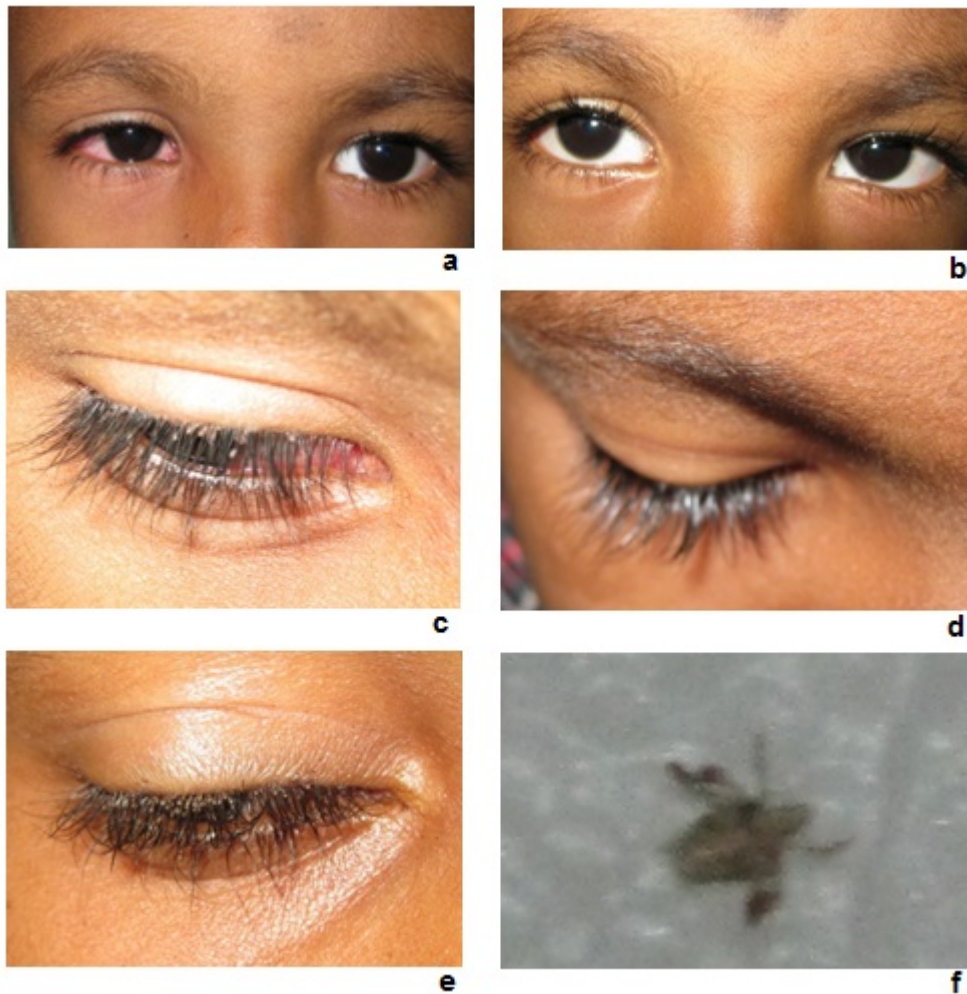
On 2<sup>nd</sup> week visit only 15 patients reported for follow up and 2 drop out. Most of them had resolution of their symptoms. Eye lashes, axillary and pubic hairs were free from adult parasite with very few nits.

On 3<sup>rd</sup> week visit only 14 patients reported for follow and 1 drop out. All were free from symptoms with no adult parasite or nits in eye lashes, axillary and pubic hairs. These patients were followed for period of 3 months with continued counseling and psychotherapy. There was no recurrence of infestation in these patients

All patients had one or two bouts of fever with body ache during the period of treatment. They were treated symptomatically with oral analgesic and antipyretics. We did not consider to investigate them for phthirus bulbi related vector born diseases.

### 4. Discussion

The mean age of 19.9±13.4 (5-46) years is comparable to earlier report of 4-50 years.<sup>1</sup> This suggest that phthirus palpebrarum infestation can occur in any age group in susceptible population. The proportion of female/male infestation in our study 7:10 is comparable to previous reports of 19:16<sup>9</sup> and 30: 20<sup>8</sup>( P=0.67, P= 1.00 respectively). Pediculosis palpebrarum equally infest male and female gender. Infestation in 35.3% (6/17) paediatric age group is a concern and in concordance with reported rate of 28% (14/50) (P=0.50).<sup>8</sup> More number of children affected with pediculosis palpebrarum needs to be reduced with integrated children health care and health education. Number of patients having associated pediculosis capitis in 35.3% (6/17) patients was comparable to reported 24%(12/50)(P=0.36).<sup>8</sup> Even thou pediculosis palpebrarum and pediculosis capitis are separate parasitic infestation >1/3 patients having associated infestation in this study suggest, all patients with pediculosis palpebraum should be meticulously examined for pediculosis capitis or vice versa. Among 17 patients 82.3% (14/17) cases were treated as simple blepheroconjunctivitis from General practitioner and Ophthalmologist and this observation is comparable with report of 83% (29/35)(P=0.49).<sup>9</sup> This indicates that resident Ophthalmologist need to be thought on this uncommon condition and meticulous examination of all cases of reluctant blepheroconjunctivitis not responding to routine



**Fig. 1:** **a:** Five year old boy with right eye *Phthirus palpebrarum* blepheroconjunctivitis; **b:** Right eye after treatment of the child in picture a; **c:** Closure view of right eye of the child in picture a; **d:** Closure view of right eye of the child in a after treatment; **e:** Right eye densely infested with *phthirus palpebrarum* in an adult; **f:** An adult lice removed for examination from patient of picture e

treatment.

Management of *phthirus palpebrarum* is case based approach. No standardized treatment protocol available till date. The treatment is combination of preventive, promotive and non specific curative approach.

Most of the studies have stressed the importance of improved personal hygiene, avoid over crowding, depopulation of other affected body areas, clothes, linen, counseling on eye / general health care and psychotherapy.<sup>1,5,8,9,16</sup> These approach will reduce the infestation load and reinfestation of patient and transmission to other members of the family / inmates. We have followed the same protocol with additional procedure of face washing with warm water and shampoo. Warm water face wash with shampoo and lid rubbing indirectly causes the dislodging the keratic material and adult lice and nits. At the end of 3<sup>rd</sup> week 82.3% (14/17) patients had resolution of symptoms and free from infestation. No transmission to other family

members or inmates. This confirms the preventive part of treatment is equally important in the management and prevention of pediculosis palpebrarum.

Second part of the treatment of pediculosis palpebrarum is to reduce the load of adult parasite and nits in the eye lids. Manual removal adult lice with fine forceps either alive or dead, trimming eye lashes or/ and epilation of affected eye lashes are well accepted methods.<sup>1,5,8</sup> In a case study by Sarma et al.,<sup>8</sup> 50 cases of pediculosis palpebrarum underwent eye lash trimming, manual removal of adult lice, cleaning with sodium bicarbonate solution followed by 1% yellow mercuric oxide ointment twice daily for 6 weeks. They were all free from infestation by 6 weeks. In a separate report from Anane et al.,<sup>1</sup> there were 7 cases of pediculosis palpebrarum, they were treated with manual removal of adult parasite followed by two doses of oral Ivermectin 200  $\mu$ gm at 1 week interval, and they were all cured from infestation. In these two reports Sarma et al.,<sup>8</sup>

group had 14 children and Anane et al.,<sup>1</sup> had 4 children they were all sedated for manual removal of parasite. In contrast some reports have not practiced the manual removal of adult lice or trimming of lashes.<sup>9,16</sup> In a case study report by Ashkenazi et al.,<sup>9</sup> 35 patients with pediculosis palpebrarum of age group 15 months to 19 years were treated with 1% yellow mercuric oxide ointment rubbing over the lid margin 4 times daily for 2 weeks and all were free from infestation within 2 weeks. In another report by Gokhale et al.<sup>15</sup> 10 cases of pediculosis palpebrarum manual removal of adult lice not practiced. All patients were treated with local rubbing of kerosene dipped eye bud over the closed eye lids for 15 seconds followed by soap water dipped swab cleaning and immediate wash with water. This carried daily for consecutive 3 days. All patients were cured by 3 days without recurrence. In our study also we have not adopted the manual removal of the adult lice, trimming or/and epilating the eye lashes and 82.3% (14/17) cases were symptom and infestation free within 3 weeks period.

The disadvantages of manual removal of adult lice are, it is difficult for the Ophthalmologist and painful to children and non cooperative patients. Even in cooperative children adult parasites and nits were destroyed by various modalities before manual removal, like local application of botulinum toxin A,<sup>17</sup> fluorescein 20% solution<sup>14</sup> Argon laser<sup>2</sup> and cryotherapy.<sup>18</sup> Complications of sedation, Local inflammation after cryotherapy, local side effects of Argon laser, systemic side effects of botulinum toxin A and aesthetic problem due to yellow color of fluorescein are disadvantages. Addition financial burden and more time consumption are added concern to patients.

Third aspect of the treatment is to break the life cycle of pediculosis palpebrarum nits – nymph – adult. Many local and systemic pediculocidal and ovicidal preparations have been used. In a group of reports where insecticides preparation like 1% yellow mercuric oxide ointment,<sup>8,9</sup> 1% permethrin drop,<sup>6</sup> parasympathomimetic agent 4% pilocarpine drops,<sup>15</sup> were used with good results. These preparations are known to cause allergic blepheroconjunctivitis, ocular irritations, corneal epithelial toxicity with various level systemic side effects.

Whereas other group of reports have used topical petrolatum containing products like vaseline and antimicrobial eye ointments,<sup>5,11,12</sup> with equally good results. Presumed action of vaseline or eye ointment is by clogging the spiracle, the proximal portion of respiratory system causing suffocation and death of the parasite. In our study eye ointment induced destruction of adult parasite and retarded the life cycle of pediculosis and majority of the patients were infestation free. None of the patients had local ocular side effects. The only reported complain was transient blurring of vision due to ointment making a layer over the cornea with movement of lid. This was not a major issue to patients.

Complications of phthirus bulbi are reluctant blepheroconjunctivitis,<sup>7</sup> marginal keratitis,<sup>11</sup> cosmetic blemish and very rarely vector born viral infection.<sup>8</sup> The chain of events in producing blepheroconjunctivitis and keratitis are; released saliva and faeces from parasite causes local inflammatory pruritis and later eczema. This eczematous lesions are secondarily infected with staphylococcus aureus and streptococcus pyogenes leading to ulcerative blepheroconjunctivitis and marginal keratitis.<sup>6</sup> Combination of antimicrobial and steroid local preparation are essential to control infection and microbial toxins related inflammation. This justify the use of antimicrobial and steroid eye drop and ointment in our study.

## 5. Conclusion

Conservative treatment by good face wash with shampoo, topical antibiotic-steroid drops and ointment are equally effective compare to manual removal of adult lice with conservative treatment (P=1.00). Preventive procedure like improved personal hygiene, reduced overcrowding, counseling and health education are symbiotic with conservative treatment. Transient visual blurring is the main disadvantage. This study is not fully foolproof. Possibility of rubbing of Permethrin 1% cream over the eye lid, manual removal of adult parasite by patients or their attendant while rubbing the face or while having head both cannot be ruled out.

## 6. Source of Funding

None.

## 7. Conflict of Interest

None.

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