

Evaluation of Ivermectin for safety, efficacy and cost effectiveness in management of Pediculosis in an urban area of India

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Abstract

Background: Pediculosis capitis (head lice infestation) is an important public health issue in India. This can have social as well as health implications. We evaluated Ivermectin in management of this important health issue in an urban area of India. **Aim:** To evaluate safety, efficacy and cost effectiveness of Ivermectin in management of Pediculosis. **Methods:** Around 20 patients of all age groups were included in the study. For patients more than 40 kg, 12 mg Ivermectin was given in single dose whereas those below 40 kg received 6mg single dose. Treatment was repeated after one week. Symptoms such as itching and head discomfort were evaluated along with Nit count. Patients were followed up for a period of one month. The cost of the therapy was estimated as part of this cost effectiveness study. **Results:** There was significant reduction in subjective symptoms of discomfort and itching at first week and also at final follow up. At the end of one month, 16 patients had complete resolution of pediculosis, 2 had partial response and 2 patients did not show significant improvement. The treatment cost for those above 40 Kg was Rs.50/- whereas for those below 40 Kg was Rs.30/-.

Conclusion: Ivermectin can be an effective and safe alternative for treatment of Pediculosis in pediatric and adult age groups.

Keywords: Pediculosis, Ivermectin, Cost effective.

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Received Date: 21/11/2019 Revised Date: 12/12/2019 Accepted Date: 28/01/2020

DOI: <https://doi.org/10.26611/10101322>

Access this article online

Quick Response Code:



Website:

www.medpulse.in

Accessed Date:
08 February 2020

INTRODUCTION

Lice have been intimately associated with humans for centuries. Infestations are increasing worldwide due to insecticide resistance¹. Although lice infestation does not cause a severe health problem, it is a personal and public health burden physically, psychologically and socially. Infestation has been reported mainly among school children, people with poor hygiene habits, and people residing in resource-poor communities². Reported

prevalence varied, even among studies performed in the same country, due to several factors, including sample size and study sites with different socio-cultural and socioeconomic status³. India is a developing country with significant number of people below poverty line. There is considerable burden of Pediculosis on health⁴. Through this study we evaluated safety, efficacy and cost effectiveness of oral ivermectin in management of pediculosis.

MATERIAL AND METHODS

Place of study: This was a clinic based study done in 20 patients after obtaining informed consent from the patients conducted in an urban locality of Hyderabad. The objective of the study was explained to the patients in their native language. The study was conducted between June to December 2019 based on recruitment of the patients.

Inclusion criteria

- 1) Patients of all age groups
- 2) Patients of either gender
- 3) Patients providing a valid consent for participation in the study

How to cite this article: Rasheeduddin Mohammed, Reddy Prasad. Evaluation of Ivermectin for safety, efficacy and cost effectiveness in management of Pediculosis in an urban area of India. *MedPulse International Journal of Pharmacology*. January 2020; 13(1): 17-19. <https://www.medpulse.in/Pharmacology/>

Exclusion criteria

- 1) Pregnant women
- 2) Children below 5 years of age
- 3) Patients who have used anti-pediculosis treatment in past 3 months
- 4) Any patient with significant co-morbid conditions such as chronic kidney disease, liver failure, malignancies, etc
- 5) Patients below 15 Kg weight

The cost of therapy was borne by the authors. The patients were given Ivermectin procured from a retail store. Patients below 40 Kg weight received 6 mg Ivermectin tablet orally costing Rs 15/- whereas those above 40 Kg weight received 12 mg Ivermectin tablet orally costing Rs 25/- on Day-1 of the visit. Patients were followed up on Day-8 where they received another dose of Ivermectin. All the patients were subsequently followed up on Day 30. The patients were evaluated on subjective assessment of itching, head discomfort and visible nit count at Day-1, Day 8 and Day 30. Patients were also advised to avoid contact with other persons with lice infestations and avoid sharing of combs.

RESULTS AND DISCUSSION

A total of 20 patients were recruited in to the study. The age range of the patients was 5.5 years to 61 years with a median age of 26 years.

Baseline characteristics: All 20 patients had significant itching at time of presentation and presence of nits, 50% (10) of the patients complained of headache/ head discomfort and 10% (2) patients had conspicuous scratch marks over the scalp.

Follow up 1 (Day 8): All patients (100%) had significant reduction in itching and visible nit count. 30% (6) of the patients still complained of head discomfort and 2 patients who had scratch marks had healing of the same with no visible scratches. They were subsequently given second dose of Ivermectin after evaluation.

Follow up 2 (Day 30): 16 patients (80%) of the patients had complete resolution of the symptoms and no visible nits which was statistically significant ($P < 0.05$). 2 patients (10%) had partial improvement/incomplete response with no subjective symptoms but presence of nits. Remaining 2 patients (10%) complained of no improvement when compared to baseline with presence of itching and nits and were considered as treatment failures. None of the patients had any serious adverse events due to Ivermectin. However, a child aged 5.5 years complained of nausea after first dose of treatment which resolved without any intervention. In a study by Singhasivanon OU et al.⁵ authors noted Ivermectin to be safe and effective for field based practice. A study by Chosidow O et al.⁶ noted that a single oral dose of 400 µg/kg repeated in 7 days has been

shown to be more effective than 0.5% malathion lotion. Glaziou P et al.⁷ noted a single dose of ivermectin to be useful in management of pediculosis. The total cost of therapy for those above 40 Kg was Rs 50/- (2 tablets of Ivermectin 12mg costing Rs.25/- each) whereas for those below 40 Kg was Rs 30/- (2 tablets of Ivermectin 6mg costing Rs.15/- each). Commercially available other modalities of treatment that includes anti lice shampoos, creams containing benzylbenzoate ranges from Rs 50/- to Rs 143/- in retail stores. Ivermectin treatment cost was at least not higher than the existing first line modalities of treatment commercially available. Though the patients were advised to avoid sharing combs and close contact with other persons with lice infestations in the family, the spread of infestation cannot be guaranteed. It is necessary to concurrently treat the family members and improve cleanliness and hygiene to reduce burden of reinfections. Children are usually at risk of developing infestation due to close contact with their classmates. It is necessary to identify such at risk groups and appropriately treat them. Ivermectin can be one of such modality of treatment which can be given en-masse to school going children to cut down on burden of disease.

Limitations of the study:

- 1) The study sample was small.
- 2) The study did not compare use of oral ivermectin with other modalities of treatment.
- 3) Not all the family members who are at risk to have concurrent lice infestation were not treated leading to higher chances of re-infection.
- 4) The study population was diverse as ages ranged from 5.5 years to 61 years.

CONCLUSION

Based on our findings we suggest Oral Ivermectin to be cost effective, safe and efficacious drug in management of Pediculosis. However, considering the low sample size in our study it would be prudent to conduct a study with a higher sample size and compare the results with existing modalities of treatment.

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Source of Support: None Declared
Conflict of Interest: None Declared

