

Severe Lice Infestation in Patient of Atopic Dermatitis

Shamail Zia^{1,2*}, Iman Zia³, Aisha Liaqat⁴, Syeda Rabab Jaffer⁵ and Faroozan Shamail¹

¹Department of Pathology, Ziauddin University, Karachi, Pakistan

²Department of Dermatology, Zia Medicare Skin Center, Karachi, Pakistan

³Department of Medicine, Ziauddin University, Karachi, Pakistan

⁴Department of Medicine, Caucasus International University, Tbilisi, Georgia

⁵Department of Medicine, Dow University of Health Sciences, Karachi, Pakistan

ABSTRACT

A 13-year-old female came to us with the complaint of severe itching in her scalp, low-grade fever, loss of weight, and enlarged occipital lymph node. The patient was having very severe infestations of lice in her scalp. The patient was very anxious and irritated because of her itching. We excluded all the options for sexual, mental, and physical abuse by having proper examination and history taking in the absence of any guardian after taking permission from guardians. The patient was having lice and nits only on her scalp, other parts of body hairs were spared from the lice infestations. The patient was maintaining proper hygiene and belongs to an upper socioeconomic family. Along with this patient's mother informed us about her diagnosis of atopic dermatitis. The patient has been diagnosed with atopic dermatitis since she was at the age of 3. Lice infestation is a very common problem in low socio-economic societies and generally, it is considered the person who has the lice infestations must be unhygienic, in reality, it has been seen very often in very neat and clean people. Very severe lice infestations depend on many factors not only in neglected, homeless, or non-hygienic people, it depends on sebum production, many skin diseases e.g. hyperhidrosis, etc.

Keywords: Atopic dermatitis, lice infestation, Louse, Nits, Permethrin.

INTRODUCTION

Lice infestation is a very common problem in every part of the world [1]. It is very common among low socio-economic societies and in unhygienic people [2]. Lice infestation is not taken as a very serious problem in our society. It is considered the norm among families. The patients & families took this problem in a very casual manner. Very severe lice infestation can stop the growth of children, make them anxious with less confidence, can spread the lice to other people, and can have a superimposed bacterial infection. In our society generally, it has been taken for granted that very severe lice infestation is present only in homeless, neglected, abused, paraplegic people. In reality, it is the other way around, with no hard and fast rule to develop severe lice infestation, it can be infested in people who are very hygienic but have some other factors e.g. increased sebum production, hyperhidrosis, etc. [3].

CASE PRESENTATION

A 13-years-old girl came to us with the complaint of very severe lice infestation on the scalp, low-grade fever, loss of weight, palpable occipital lymph nodes, severe itching, small wound infection on the scalp with crust on it, severe dryness on the whole body. The patient is diagnosed case with atopic dermatitis since the age of 3 years. The patient's mother informed us that lice infestation in the patient was increasing day by day instead of taking all the measures. The patient was in very severe distress

and itching violently. We ruled out the physical, sexual, and mental abuse by taking a detailed history, proper examination, and asking multiple questions separately from the patient in the absence of her guardian after taking permission from guardians. The patient was not neglected and she was mentally fine. She belonged to a high socio-economic family and had 3 siblings, all her siblings were around her age, and no one was having lice infestation. The parents of the patient were very



Figs.: (1A) Shows the nits, (1B) Shows the nits and lice, (1C) Shows the nits spread all around scalp.



Figs: (2A) Shows the dryness of skin with lichenification around cubital fossa, (2B) Shows hyperpigmentation and lichenification, (2C) Shows itching marks with post-inflammatory hyperpigmentation.

*Corresponding author: Shamail Zia, Department of Pathology, Ziauddin University, Karachi, Pakistan; Email: drshamailzia@gmail.com

Received: August 22 2021; Revised: October 17, 2021; Accepted: October 25, 2021

DOI: <https://doi.org/10.37184/lnjpc.2707-3521.3.19>

concerned as the patient was also losing weight and she was getting very irritated day by day because of severe itching. **Figs. (1A-1C)** shows, severe lice, and nits on the scalp of the patient.

Figs. (1A-1C) shows the Lice and Nits all around Scalp hairs.

Figs. (2A-2C) shows the lichenification and post-inflammatory pigmentation around the cubital fossa that are the cardinal signs of atopic dermatitis.

The patient's mother informed us that she noted worsening of atopic dermatitis symptoms *e.g.* excessive dryness, hyperpigmentation mostly on the flexural folds, and excessive itching all over the body and simultaneously increase the severity of lice infestation in the patient irrespective of all the precautions taken care of.

DISCUSSION

Lice are a member of the order Phthiraptera. They are wingless dorsally flattened insects, and they are obligate ectoparasites of birds and mammals. They are host-specific and spend their whole life on the host [4].

Humans are parasitized by three species of lice, all are members of the Anoplura (sucking lice). There are two genera; *Pediculus*, containing *Pediculus humanus capitis* (the head louse) and *Pediculus humanus corporis* (the body or clothing louse), and *Pthirus* with a single species *Pthirus pubis* [5]. The name of the latter genus has often been spelled *Phthirus*, but the original spelling *Pthirus* has been ruled correct (International Commission on Zoological Nomenclature, 1987).

Head lice and clothing lice are almost identical morphologically and are capable of interbreeding, but on the host, they maintain their territorial preferences.

MORPHOLOGY AND BIOLOGY

The adult female is a greyish-white insect 3-4 mm long. The male insect is smaller in comparison with the female. Female during her life span of approximately 40 days, lay 7 eggs daily. The eggs are cemented to hair shafts with chitinous cement material secreted by the female accessory gland. Eggs are oval and flesh-colored [6]. Once the louse emerged from the egg, the color of the egg became white, and the empty egg name has been called to nit. The louse hatched in about 8 days and the louse reaches maturity in approximately 10 days. The algorithm of the life cycle of lice is mentioned in **Fig. (3)**.

The head louse has a worldwide distribution and is common in developed and underdeveloped countries, and infestation is more common in low socio-economic societies [7].

Head lice are very common in the school-going children age range 3-11 years. Most survey shows that girls have more head lice infestation than boys

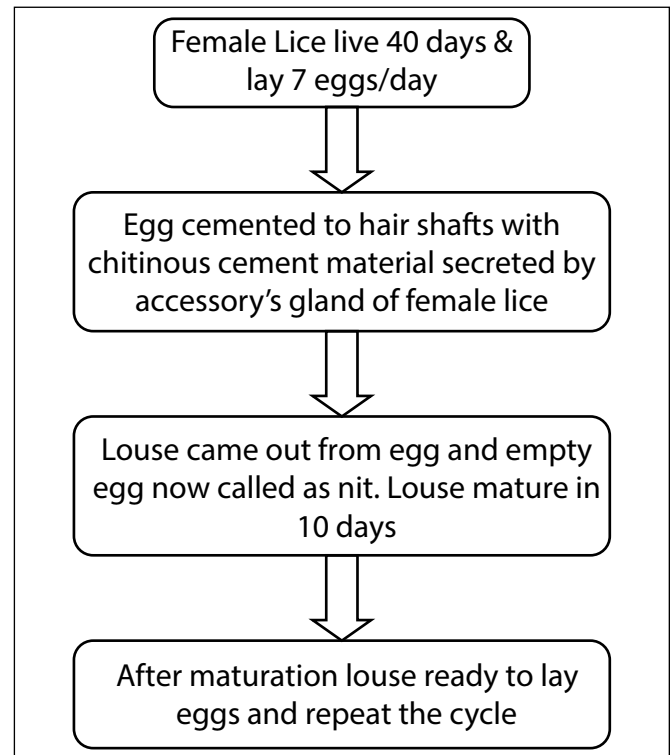


Fig. (3): Showing the algorithm of Lice's Life cycle.

We have seen that lice infestation causes severe itching and because of this chances of superimposed bacterial infection increased [8].

Lice infestations are very common all around the world [9]. It is thought the majority of louse infections are acquired by head to head contact, optimal conditions for transfer being when hairs are parallel and slow-moving.

It is not concluded anywhere about the importance of atopic dermatitis and hyperhidrosis causing increase lice infestation severity [10]. We are reporting this case because our patient had that problem.

Clinical features of lice infestations are, many patients can be asymptomatic but most of the patients have symptoms and present with scalp itching in addition to secondary bacterial infections as a result of scratching. The pruritic papular lesion may occur at the nape of the neck and generalized nonspecific pruritic eruptions develop.

Treatment for lice infestation: 1% permethrin lotion or shampoo is mostly used in the treatment of lice infestation [11]. Oral therapy of Trimethoprim/Sulfamethoxazole has been also reported to eradicate head lice by affecting symbiotic bacterias inside lice and these bacteria are essentials for louse survival [12].

Atopic dermatitis is very difficult to explain as it doesn't have specific diagnostic tests and can express different clinical features in every individual [13]. Atopic dermatitis, also known as atopic eczema is a chronic inflammatory itchy skin condition that can relapse frequently. Rash

of eczema is characterized by excoriation marks with lichenified skin mostly on flexural distribution.

DIAGNOSTIC CRITERIA

The UK refinement of Hanifin and Rajka's diagnostic criteria for Atopic dermatitis is following. In order to qualify for Atopic Dermatitis with UK diagnostic criteria, the patient must have,

- a) An itchy skin condition (or scratching and rubbing in a child reported by parents) Plus 3 or more of the following:
- b) Onset below age 2 years
- c) History of skin flexures involvement
- d) History of generalized dry skin
- e) History of atopic dermatitis in 1st-degree relatives
- f) History of skin crease involvement

ROLE OF INFECTIONS AND LICE INFESTATIONS

Patients with atopic eczema are susceptible to certain cutaneous infections and parasitic infestations. The most common skin infection is staphylococcus aureus. However, human papillomavirus-induced warts, fungal infections, viruses (HSV1 and 2, vaccinia, coxsackie A, and the poxvirus of the molluscum contagiosum) are also the frequent pathogens causing, severe complications as far as the parasite is a concern no confirmation about any relationship from atopic eczema.

CONCLUSION

Lice infestation can cause many health-related problems in patients *e.g.*, itching, irritation, growth delay, low-grade fever, loss of confidence, palpable and tender lymph nodes, scalp infection, abscess, *etc.* In general lice infestations are not taken as a serious problem by society as many other dermatological conditions. It is physicians' responsibility to spread awareness about lice infestations related health problems in their patients and also inform society that severe lice infestation is not only related to overcrowding, unhygienic conditions, neglected and homeless people but it can be infested because of many dermatological diseases in which patient usually seen very neat and clean. Atopic dermatitis patients, in general, have very severe itching all over the body and if atopic patients have lice infestation then the itching can be increased many folds. The use of proper remedies and moisturizers has been required to decrease the itching caused by the dryness of atopic dermatitis.

CONSENT FOR PUBLICATION

Written Informed consent was taken from the patient.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

ACKNOWLEDGMENTS

We are thankful for our mentors a) Dr. Naeem Uddin, practicing Dermatologist, Scientist and 5 USPTO Patents Holder Karachi, Pakistan, b) Dr. Atif Ali Hashmi, Department of Pathology Associate Professor Liaquat National Hospital Karachi, Pakistan, c) Dr. Adeel Ahmed, American Board Certified Dermatopathologist, Beckley, West Virginia, United States of America, and d) Dr. Ghassan Tranesh, Assistant Professor University of Arizona College of Medicine, Tucson, Arizona, United States of America. Following are the other doctors, who helped us too,

Fazail Zia, Syed Jawwad Ali, Muhammad Ali Khan, Vardah Zia, Syed Minhaj Hussain, Syed Rafay Yaqeen and Sanaullah Khan.

REFERENCES

1. Cummings C, Finlay JC, MacDonald NE. Head lice infestations: a clinical update. *Paediatr Child Health* 2018; 23(1): e18-24.
2. Leonard T, Hughes AE, Pruitt SL. Understanding how low-socioeconomic status households cope with health shocks: an analysis of multi-sector linked data. *Ann Am Acad Pol Soc Sci* 2017; 669(1): 125-45.
3. Takcı Z, Tekin O, Karadağ AS. A pediculid case: autosensitization dermatitis caused by pediculosis capitis. *Turkiye Parazitoloj Derg* 2012; 36(3): 185-7.
4. Light JE, Smith VS, Allen JM, Durden LA, Reed DL. Evolutionary history of mammalian sucking lice (Phthiraptera: Anoplura). *BMC Evol Biol* 2010; 22: 292-310.
5. Weems HV Jr. Featured Creatures. Available at: https://entnemdept.ufl.edu/creatures/urban/crab_ouse.htm.
6. Meister L, Ochsendorf F. Head lice. *Dtsch Arztebl Int* 2016; 113(45): 763-72.
7. Saraswat N, Shankar P, Chopra A, Mitra B, Kumar S. Risk factors associated with head lice infestation in rural pediatric patients. *Indian Dermatol Online J* 2020; 11: 25-8.
8. Huntington MK, Allison JR, Hogue AL, Shafer CW. Infectious disease: bedbugs, Lice, and Mites. *FP Essent* 2019; 476: 18-24.
9. Bachok N, Nordin RB, Awang CW, Ibrahim NA, Naing L. Prevalence and associated factors of head lice infestation among primary school children in Kelantan, Malaysia. *Southeast Asian J Trop Med Public Health* 2006; 37(3): 536-43.
10. Uddin N, Zia S, Shamail F, Zia F, Ali SJ. Adermatoglyphia (loss of fingerprints) in young female patient having the conditions of hyperhidrosis and atopic dermatitis. *Liaquat National J Prim Care* 2021; 3(1): 39-40.
11. Idriss S, Levitt J. Malathion for head lice and scabies: treatment and safety considerations. *J Drugs Dermatol* 2009; 8: 715-20.
12. Burns DA. Action of cotrimoxazole on head lice. *Br J Dermatol* 1987; 117: 399-400.
13. Zia S, Zia F, Panchal S, Ahmad A, Jaffer S R. Uses of antidepressant as adjunct treatment of very severe atopic dermatitis. *Liaquat National J Prim Care*. Available at: <https://journals.lnh.edu.pk/lnjpc/Home/article?uid=3fb91725-83a5-456e-85b6-5a97143b258d>