

PEDICULOSIS CAPITIS WITH A RARE COMPLICATION OF CICATRICIAL ALOPECIA: A CASE REPORT

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ABSTRACT Pediculosis capitis is lice infestation of the scalp hair that mostly occurs in children aged 3 to 12 years. Intense scalp pruritus is the most common complaint. Pruritus may occur 2-6 weeks after the initial infestation which reflects a delayed immunologic response to the lice or excreta. Excoriation, erythema, and pyoderma on the posterior scalp and neck are typical findings. Cicatricial alopecia is a possible but rare complication. Definitive diagnosis is made through the identification of nits and/or adult lice on the scalp hair. A 6-year-old girl came with a chief complaint of pruritus on the head one week before presentation followed by pustules and nodules. Erythematous papules and plaques, crusting, excoriation, and alopecia were found in the occipital and temporal regions. In the temporal hair shaft, light brown grains which were difficult to remove were found. Microscopic examination showed nits in the hair shaft and adult lice. Dermoscopic examination of the alopecic region showed white dots and the absence of hair follicle growth, suggestive of cicatricial alopecia. The patient was treated with 1% permethrin lotion along with oral and topical antibiotics, with the permethrin repeated in the following week. The patient showed a good clinical response and no lice nor nits were found in the following appointment.

KEYWORDS cicatricial alopecia, pediculosis capitis, 1% permethrin

Introduction

Pediculosis is lice infestation on humans which have been reported since antiquities. Three types of lice may cause a human infestation, *Pediculus humanus capitis* which causes pediculosis capitis, *Pediculus humanus humanus* which causes corporal pediculosis and *Phthirus pubis* which causes pediculosis pubis.[1] Pediculosis capitis is the most common type and mostly occurs in children aged 3 to 12 years. A meta-analysis in Iran showed that the prevalence of pediculosis capitis in 200,306 individuals aged 5-13 years was 7.4%[2]. In Indonesia, two studies in boarding schools showed a high prevalence, about 71.3% and

100% [3],[4]. *Pediculus capitis* is a specific organism, and the size is approximately 2-3 mm. This obligate human parasite sucks the blood from the host every 4-6 hours. Female lice live for 30 days and incubate 5 to 10 eggs every day. The egg is usually located close to the scalp because of its warm condition. In general, eggs are attached on hairs 1 cm away from the scalp. The size of egg capsules (nits) is 0.8 mm and attached to the hair by a protein matrix that is structurally similar to the amino acid of a human hair. In general, head lice can rarely survive more than 36 hours from their host without blood. However, in suitable temperature and humidity, nits can survive and hatch even though it has been separated for ten days from the host.

Intense scalp pruritus is the most common clinical symptom. An intense itch occurred about 2-6 weeks after the initial infestation, which reflects a delayed immunological response to excretion component. However, some individuals can be asymptomatic. Excoriation, erythema, pyoderma, and scales on the scalp and nuchal are typical findings. A definitive diagnosis is made by identifying adult nits and lice on the hair of the scalp. Complications include secondary infections which may manifest as fever and lymphadenopathy. In rare cases, severe pyoderma may even lead to permanent hair loss (cicatricial alopecia). This

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Fig.1.A.

Figure 1. Clinical manifestations before treatment - erythematous plaques with crust (A) and (B), crusted erythematous papules (C).



Fig.1.B.

case reports a case of pediculosis capitis in a 6-year-old girl with cicatricial alopecia due to severe pyoderma caused by pediculosis capitis.

Case Report

A 6-year-old girl came with the chief complaint of severe scalp itching in the last one week. The intense pruritus led to intense scratching which resulted in bleeding and pus-filled boils. Her family also complained of the malodorous head. Also, there was a wound in the nuchal due to scratching. The patient's mother said she often noticed head lice in the patient's scalp. Similar complaints in families were denied, but the patient's classmates reported similar complaints. There was no history of animal contact. The patient had gone to the health centre and was given betamethasone ointment with no improvement. A history of drug and food allergy was denied.

The patient was in a good general condition. Dermatologic examination showed the erythematous papules and plaques, crusts, excoriations, and alopecia on the occipital and temporal regions (Figure 1). Also, multiple crusted and erythema papules were present on the nuchal area. In the temporal hair shaft, light brown grains which were difficult to remove were found. Microscopic examination using immersion oil showed nits on the hair shaft and adult lice (Fig. 2A and B). Dermoscopic examination of the alopecia region showed white dots with diffuse boundaries and no growth of hair follicles.



Fig.1.C.



Fig.2.A. Eggs (nits) on microscopic examination using emersion oil (x40)



Fig.3. Dermoscopic examination shows diffuse white dots where hair follicle growth is not found (blue arrow) (40x)



Fig.2.B. Adult Lice. (x40)

The patient was given permethrin 1% lotion on the scalp and repeated a week later. Also, the patient was also prescribed Cefadroxil 250 mg bid, Chlorphenamine 2 mg TID; Paracetamol 250 mg tid were given. Topical treatment on the wound area included fusidic acid cream and compressed by NaCl 0.9 %. One week later, significant clinical improvement was seen. Excoriation, crusting, and pus had significantly decreased. Also, the eggs and lice were no more observed. (Fig. 4)

Discussion

Pediculosis capitis is very commonly found in children aged 3-12 years.[1] The lower incidence rate in older children may be caused by their tendency to live more independently and hence less contact from their peers.[6] Several studies have suggested that girls are more often infected with pediculosis capitis. Girls are shown to have more frequent and closer head-to-head contact than men.[7],[8] Also, the longer hair found in girls increases the likelihood of lice to grip the hair and migrate from one person to another, although this theory is still controversial. [6],[7]

Physical examination showed that the erythematous papules and plaques, crusts, and excoriations were found in the occipital and temporal regions. Data from the literature show that scalp pruritus is the chief complaint of patients with pediculosis capitis.[1],[6],[9] Pruritus is caused by delayed hypersensitivity due to flea antigens that come into contact with the skin when fleas suck blood. The lice can cause erythematous macules or papules, but examiners often only find excoriations, erythema, and crust, as found in this case. Repeated scratches affect skin integrity of the skin, resulting in secondary bacterial infections.[9] Also, head lice can carry *Staphylococcus aureus* and *Streptococcus pyogenes* on their surface which are common causes of pyoderma.[5] Therefore, diagnosis of pediculosis capitis must



Fig.4.a. Control on the seventh day



Fig.4.b. Control on the seventh day

always be considered in every case of pyoderma in the head.

White dots and the absence of hair follicles are dermoscopic features of cicatricial alopecia.[12] Cicatricial alopecia is a permanent hair loss is characterized by loss of follicular ostium and the presence of connective tissue that replaces hair follicles.[13] Connective tissue is seen as white dots below the dermoscopy. In this case, cicatricial alopecia results from a severe pyoderma because of the secondary infection. The literature shows that cicatricial alopecia is a rare complication of pyoderma due to pediculosis capitis.[9]

Permethrin is the most widely used pediculicide to treat pediculosis capitis. A 1% lotion preparation is applied to the entire scalp and left for 10 minutes before rinsed. Although effective as pediculicide, it is ineffective to kill nits and thus it is recommended to be repeated between the 7th and 10th day.[10] Permethrin works by binding to voltage-gated sodium channel and preventing the transition from activated to non-active conditions. This causes a state of continuous depolarization which causes flea paralysis and death. [6],[14]

Conclusion

Pediculosis capitis is an infection that often occurs in children and can cause rare complications such as cicatricial alopecia. Therapy with permethrin 1% lotion and systemic antibiotic for secondary infections proved to be effective and showed significant clinical improvement.

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