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CASE REPORT AND REVIEW

Bacillary angiomatosis: a rare disease in the era of HAART

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Conflict of interests: None

Key words: Bacillary angiomatosis, Bartonella, HIV.

Abstract

Bacillary angiomatosis (BA) is a rare disease described in immunocompromised patients including those with HIV with a CD4⁺ lymphocyte count of < 100 cells/mm³. BA lesions have been identified in skin, liver, spleen, bone and lymph nodes and rarely in the respiratory tract, gastrointestinal tract and brain. Skin lesions may present as superficial angiomatous papules and nodules, violaceous lichenoid plaques or deep subcutaneous nodules.

A 35-year-old, male soldier, from Addis Ababa, with known HIV infection, was referred with a clinical suspicion of a malignant skin tumour. Skin biopsy suggested an inflamed haemangioma. On physical examination, he had multiple erythematous papules, ulcerated nodules and plaques that easily bled after minor trauma. The skin lesions initially started on both his legs and left buttock and later involved his right arm and face. A repeated histopathological evaluation by a different pathologist suggested a diagnosis of BA. Consequently, the patient was treated with doxycycline 100 mg twice daily for 3 months with marked improvement.

In an era with antiretroviral therapy, BA is now a rare disease that can be easily overlooked or misdiagnosed. Therefore, a high degree of clinical suspicion on the part of health professionals is needed to diagnose this condition especially in an environment without confirmatory diagnostic capabilities. To the best of our knowledge this is the second case report of BA in Ethiopia and the first in an adult patient.

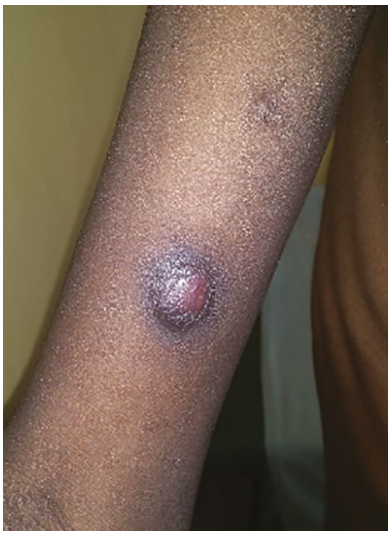

Fig 1. Erythematous plaques on right arm.

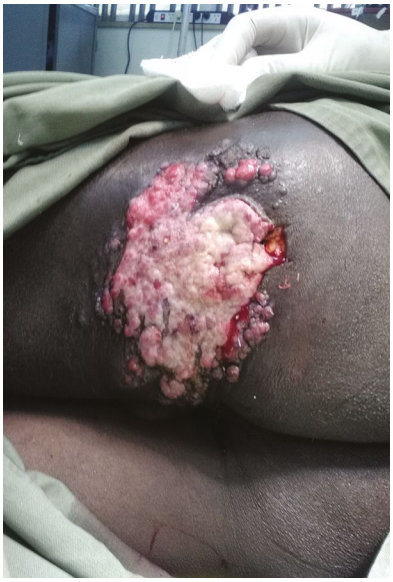

Fig 2. Flesh-coloured fungating plaque on buttock (site of biopsy)

Background

Bacillary angiomatosis (BA) is caused by facultative intracellular, Gram-negative, bacilli *Bartonella henselae* or *B. quintana*.[1–3] It was first described in 1983 as a new condition in patients with HIV, especially in those with a CD4⁺ lymphocyte count of < 100 cells/mm³.[1] It is also seen in immunocompromised patients receiving chemotherapy for haematological malignancies and in organ transplant recipients.[2] BA is usually seen in adults, and it has no

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sex predilection.[3] It is most commonly seen in skin and subcutaneous tissue, although virtually any internal organ can be affected. Patients usually present with single or numerous, firm, red or violaceous papules and nodules. These lesions may be painful or bleed easily after trauma. Large subcutaneous nodules may also ulcerate. Disseminated infection is associated with systemic signs and symptoms such as malaise, fever, nausea, vomiting, diarrhoea, abdominal pain, hepatosplenomegaly, night sweats and weight loss.[2,4]

Case report

A male soldier aged 35 years, from Addis Ababa, with known HIV infection, was referred to Tikur Ambesa Teaching Hospital dermatological clinic with a clinical suspicion of squamous cell carcinoma on the skin of his left buttock. He had been on an unspecified highly active antiretroviral therapy (HAART) regimen at his local health facility for the past 6 months and was on anti-tuberculosis medication 4 years prior to this. His CD4 count, which had been measured a month previously, was 3 cells/mm^3.

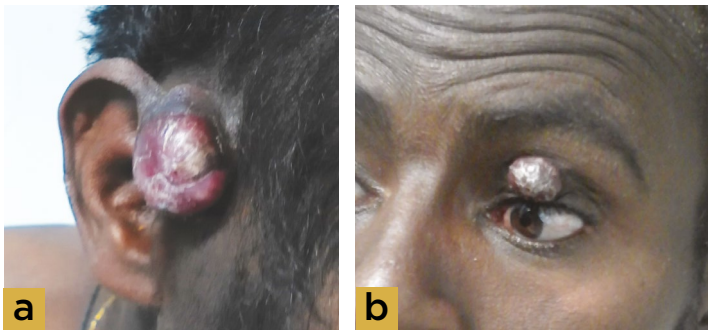

Fig 3. (a) Erythematous dome-shaped tumour with overlying fine whitish scale on right preauricular skin. **(b)** Erythematous dome-shaped pedunculated plaque on the left eyelid.

He presented with asymptomatic lesions of 3 months duration. The lesions initially started on both his legs and left buttock and later also spread to his right arm and face. They started as small papules and progressively increased in size and occasionally bled after minor trauma. He complained of mild fever, fatigue, unspecified weight loss and loss of appetite. He had no night sweats, cough, mucosal lesions, gastrointestinal or neurological symptoms, or any other known medical condition. He had no history of trauma or contact with a cat. He denied having head or body lice and had no lice upon inspection. At presentation he was not taking any medication other than HAART and cotrimoxazole prophylaxis.

On physical examination, he was emaciated but his vital signs were within the normal range, and he had no other findings except those on his skin (Figs. 1, 2). He had an erythematous dome-shaped tumor with an overlying fine whitish scale anterior to the right ear (~ 4 x 4 cm) and one on the left eyelid (~ 2 x 3 cm) (Fig. 3a, b) and erythematous plaques on his right arm (Fig 1), a centrally ulcerated hyperpigmented nodule with an overlying crust on his right thigh (~ 8 x 9 cm) (Fig. 4) and similar ulcerated plaques over his left arm and leg. He had swelling of both legs below his knee with multiple scattered erythematous and hyperpigmented dome-shaped nodules (Fig. 5). The largest lesion was on his left buttock (~20 x 15 cm) a flesh-colored fungating plaque with satellite dome-shaped erythematous nodules (Fig. 2). He also showed multiple small skin-colored and erythematous papules and nodules on his shoulder and upper arm. There was a hyperpigmented scar with a dermatomal distribution on his left trunk which was suggestive of a healed herpes zoster lesion.

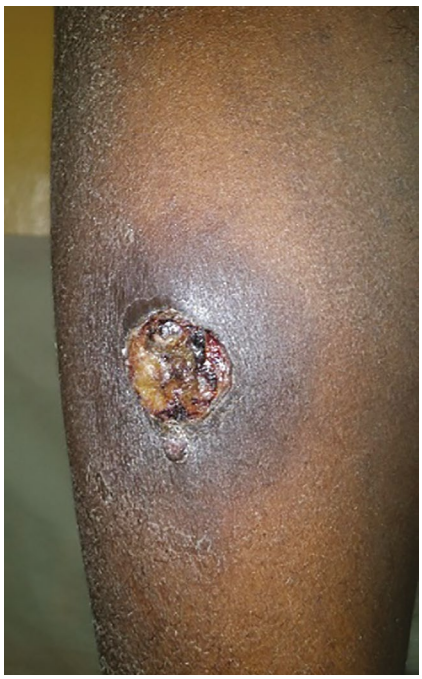

Fig 4. Ulcerated hyperpigmented nodule with an overlying crust on the right anterior thigh.

Additional investigations

Full blood count revealed haemoglobin 9.8 g/dl, haematocrit 30%, white blood cell count 6800/mm^3 with 84% neutrophils and 9.7% lymphocytes; the platelet count was 240,000/mm^3 and erythrocyte sedimentation rate 100 mm/h. Renal and liver function tests revealed; blood urea nitrogen 36 (N 10–50 mg/dl), creatinine 0.6 mg/dl (N 0.6–1.1 mg/dl) and alkaline phosphatase (ALP) 487 (N 80–306 IU/L), serum glutamic-oxaloacetic transaminase (AST) 37(0–37 IU/L), serum glutamic-pyruvic transaminase 1 (ALT) (0–42 U/L) respectively. X-ray of chest, left leg and abdomen were normal. The histological report from the referring hospital was suggestive of an inflamed haemangioma but a further incisional biopsy was taken from the left buttock and right leg skin lesions for a second evaluation. Sections (haematoxylin and eosin stain) from both samples showed dermal vascular proliferation with polymorphs, and a lymphocyte and

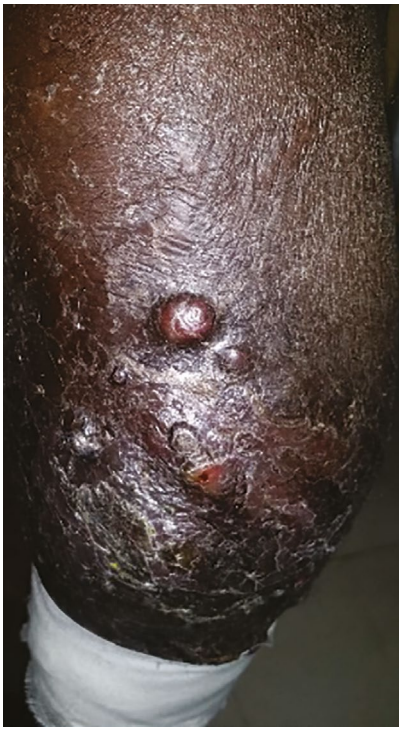

Fig 5. Swollen left leg with multiple scattered erythematous and hyperpigmented dome-shaped nodules. NB: Bandage was applied on a bleeding ulcerated nodule.

histocyte infiltration (Fig. 6). A diagnosis of BA was suggested.

With BA as the likely diagnosis, the patient was started on doxycycline 100 mg twice daily. At the 1-month follow-up, almost all his lesions had decreased in size (Fig. 7). The treatment was continued for another 2 months. Three months after starting the treatment almost all lesions had disappeared (Fig. 8). The plan was to continue the treatment for another month and repeat the CD4 count on his next visit, but the patient was lost from follow-up.

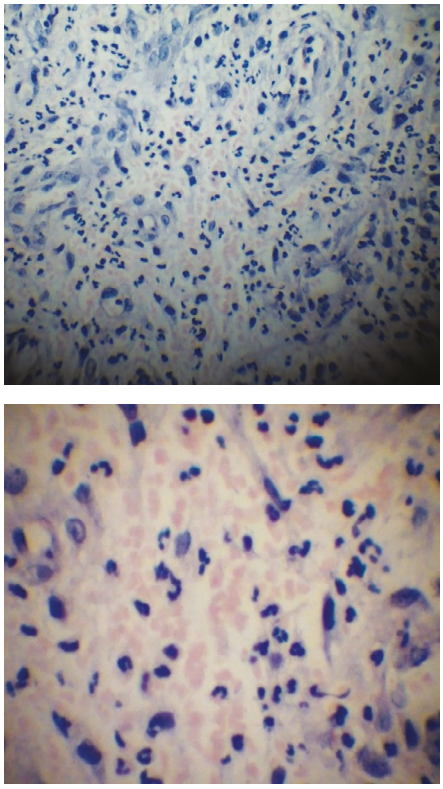

Fig 6. Dermal vascular proliferation with polymorphs, lymphocyte and histocyte infiltration (haematoxylin and eosin stain, (a) × 100; (b) × 400).

Discussion

BA is a rare disease characterized by neovascular proliferation in the skin or the internal organs (peliosis) because of infection with *B. henselae* or *B. quintana*.[2,3] Recently *B. elizabethae* has also been reported as a cause of BA.[5] The reservoirs of *B. henselae* and *B. quintana* are cats and humans and the vectors are cat flea and human body louse, respectively.[2,3] An Ethiopian study on 134 patients identified *B. quintana* in 19 of 271 (7%) head lice collected from 9 (7%) people and in 76 of 424 (18%) body lice collected from 17 (13%) people.[6] Another Ethiopian study from Jimma showed *B. quintana* in 6 of 65 (9%) head lice isolates and 1 of 33 clothing lice isolates.[7] An additional study from Bishoftu, Ethiopia, detected *B. henselae* DNA in 6% (2 of 34) of *Ctenocephalides felis felis* (cat flea) collected from cats.[8] Of the cats examined in and around Addis Ababa, five (11%) of 46 had antibodies to *Bartonella* spp.[9] The true incidence of *Bartonella* infections in patients with HIV is likely much lower since the introduction of antiretroviral therapy. In a study in Germany, the incidence was estimated to be 1.2 cases per 1000 patients infected with HIV.[2] It is also known to affect immunocompromised patients receiving chemotherapy for haematological malignancies and organ transplant recipients.[2] It is rarely reported in immunocompetent patients. BA is more common in adults than in children and it has no sex predilection.[3]

BA lesions have been identified in the skin, internal organs, liver (peliosis hepatis), spleen (splenic peliosis), bone and lymph nodes, and rarely the respiratory tract, gastrointestinal tract and brain. Skin is the most common site of disease, ranging from 55% to 90% of total cases. Skin lesions may present as superficial angiomatous papules and

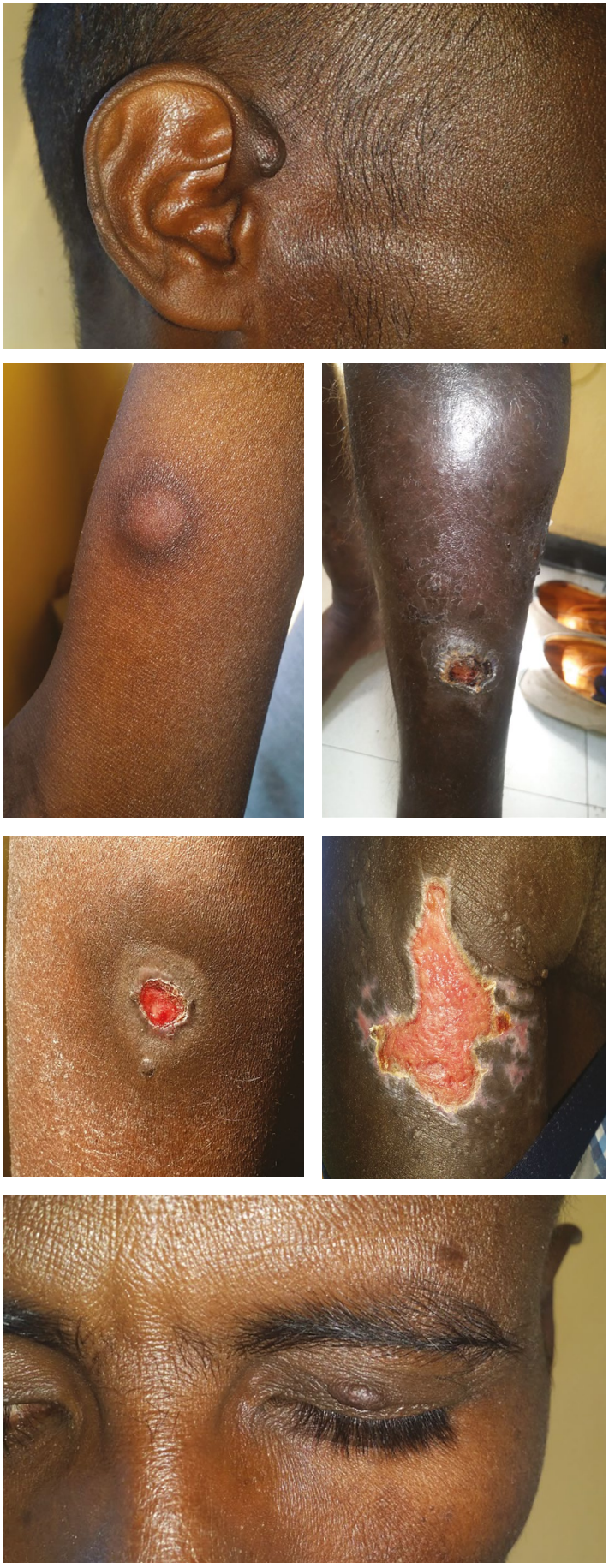

Fig 7. A month into treatment showed a decrease in the size and erythema of all skin lesions.

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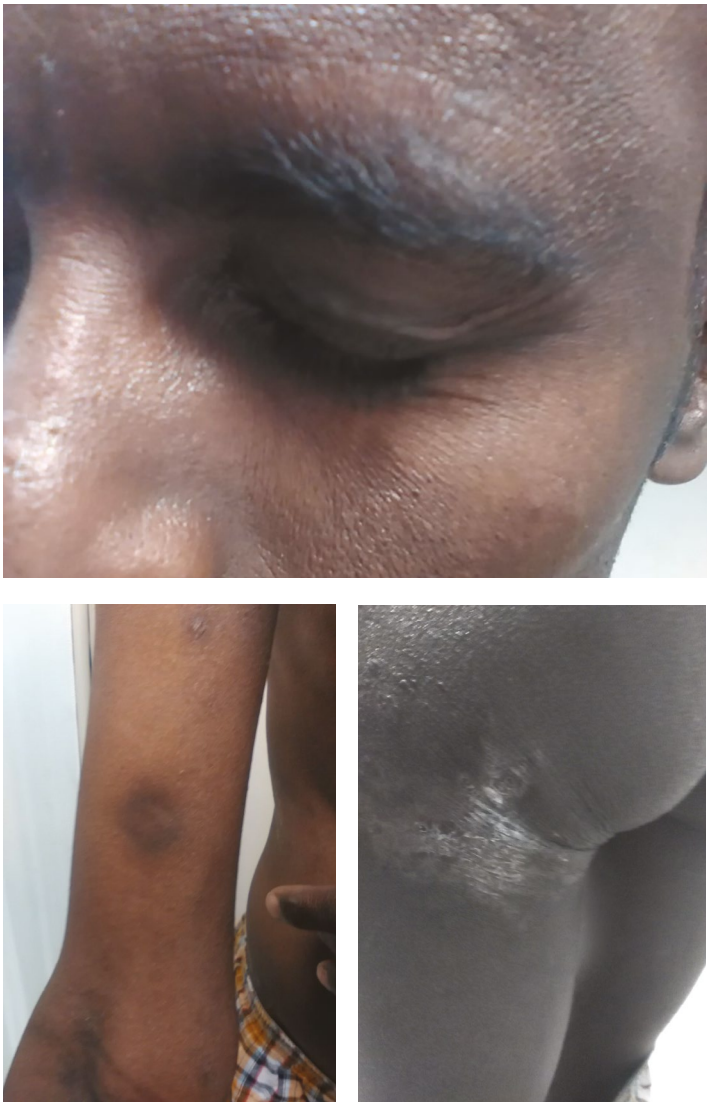

Fig 8. Three months into his treatment, almost all lesions had resolved.

nodules, violaceous lichenoid plaques or deep subcutaneous nodules.[2,3]

The papules and nodules may resemble pyogenic granulomas and may be pedunculated or surrounded by a collarette of scales. These lesions may show central umbilication, crusting or ulceration. Subcutaneous nodules are often several cms in diameter and skin-coloured; overlying erosions or ulcerations may develop. Less commonly, BA presents as a cellulitis-like erythematous plaque that may involve the underlying bone.[2] *Bartonella henselae* and *B. quintana* have an approximately equal propensity to cause cutaneous lesions, and *B. henselae* is the primary cause of liver, spleen and lymph node lesions, whereas *B. quintana* is the primary cause of lesions in the subcutis and bone. Peliosis hepatis is characterized by abdominal pain and hepatosplenomegaly. Patients often have elevated ALP and normal or slightly elevated bilirubin and aminotransferases. Thrombocytopenia and pancytopenia have been reported in splenic peliosis.[2] Bone involvement is characterized by painful, isolated, lytic lesions. The radius and tibia are most commonly affected and may be accompanied by overlying cellulitis.[2] Regardless of the location of the disease, patients with BA may have a fever, nocturnal sweating, chills, malaise, headache, anorexia and weight loss.[2,4] Our patient had papules and nodules resembling pyogenic granulomas, ulcerated nodules with crusting and hyperpigmented plaques. He had no mucosal, palmar or plantar lesions. Even though there was no objective record of temperature increase, the patient complained of mild fever along with decreased appetite, fatigue and weight loss. He had no symptoms suggesting other organs were involved and imaging studies (including abdominal ultrasound) were normal but on laboratory examination, he had anaemia and raised ALP.

Kaposi sarcoma (KS), verruga peruana (also a *Bartonella* infection with vascular lesions), mycetoma and other conditions may have similar and overlapping features with BA. KS is a vascular and lymphatic endothelial neoplasm caused by human herpesvirus 8 (HHV8). There are several subtypes of KS, including AIDS-related KS that commonly occurs with $CD4^+$ T cell counts < 500 mm^3. It is the most common HIV-associated cancer in sub-Saharan Africa, with an incidence among people with HIV of 164 to 334 per 100,000 person-years. ART decreases KS incidence but does not bring it down to zero, even with adherence. Of particular importance is that BA can clinically mimic KS.[2] Clinically, KS is firmer to touch and not as friable. The palate is often affected. Even histological differentiation of BA and KS can be difficult in early lesions, especially if HHV-8 immunostaining or Warthin–Starry staining is not available.[10] Also, BA and KS can present simultaneously, further complicating the clinical and histopathological diagnosis.[10] Mistaking BA for KS could lead to unnecessary chemotherapy with a poor outcome.[2] In cases where a patient cannot be definitively diagnosed in resource-limited settings, and the clinical differential diagnosis includes both BA and KS, initial empirical treatment with erythromycin or doxycycline has been proposed.[10] From our experience, we can endorse this.

The definitive diagnosis of BA is made by identifying the infectious agent in affected tissue. This is done by the presence of large clusters of bacteria on modified Warthin–Starry silver staining and culture from the lesions and the patient's blood. Polymerase chain reaction of affected tissue can also distinguish among the different *Bartonella* species. Antibodies to *Bartonella* can be detected but this test is not generally useful.[2,3] In our patient the histology was suggestive but not confirmatory of BA.

Erythromycin 500 mg four times a day or doxycycline 100 mg twice a day is recommended for most patients, but azithromycin (500 mg daily) and clarithromycin (500 mg twice daily) are also options for patients who cannot tolerate erythromycin or doxycycline. Doxycycline, with or without rifamycin, is the treatment of choice for bartonellosis involving the central nervous system. Therapy should be administered for at least 3 months.[2] Cutaneous lesions begin to improve within 1 week of appropriate antibiotic therapy and may resolve completely within 4 weeks. If a patient does not respond with empirical doxycycline or erythromycin treatment it is reasonable to consider an alternative diagnosis.

Conclusion

BA is a rare disease during the ART era and it can easily be confused with benign and malignant skin tumours. Therefore, a high degree of clinical suspicion is needed to diagnose this condition, especially, in areas without confirmatory diagnostic capabilities. If not accurately diagnosed the disease can progress and result in death. But once the correct diagnosis is made the treatment is not difficult and satisfactory improvement is achieved with in few weeks.

Acknowledgements:

I wish to thank the patient, the nurses involved in his care, and the department of Dermatovenereology at Tikur Ambesa and ALERT Hospital, Addis Ababa University for their mentorship. I would also like to thank Dr Bernard Naafs for his mentorship and guidance and Dr Yohannes Tsegay (pathologist) for his contribution.

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CASE FOR DIAGNOSIS – PART ONE

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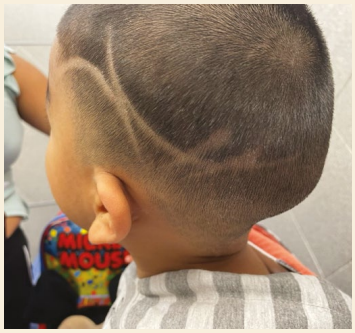
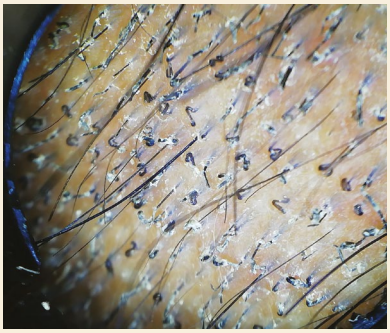
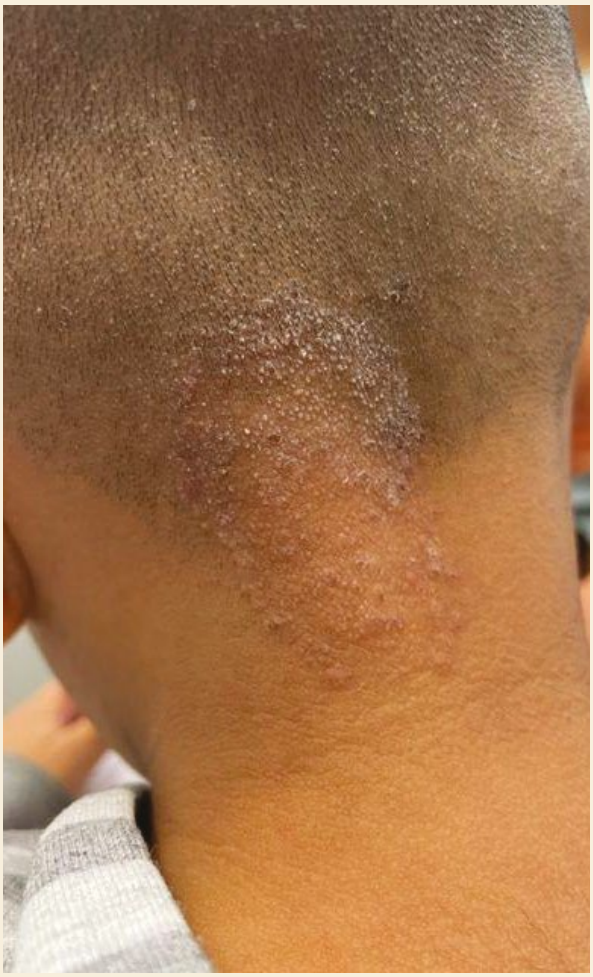
A 5-year-old boy, previously healthy, presented with a 2-week history of an itchy plaque on the scalp. Physical examination revealed a well-demarcated area with fine scales; a hair-pull test was positive (i.e. more than two hairs obtained from gentle pulling). Dermoscopy revealed fine scales and black dots. He had recently gone to a barber shop for a haircut.

The family had no pets.







QUESTION 1:

What is the likely diagnosis?

a) Scalp psoriasis b) Tinea capitis c) Seborrheic dermatitis.

Answers to Part one and further questions on page 6.

World Health Organization's first global meeting on skin Neglected Tropical Diseases

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Primary healthcare workers in all countries endemic for skin neglected tropical diseases (skin NTDs) will be heartened to know that on 27–31 March 2023, the first World Health Organization (WHO) global meeting for these skin diseases was held in Geneva, Switzerland.[1] This landmark meeting was attended by about 300 in-person and over 1000 online skin NTD experts, national programme managers plus representatives from WHO and partner organizations from 86 countries. It sought to discuss all aspects of the 10 NTDs with skin manifestations, identify lessons learnt on the ground, strengthen integrated approaches and improve research and hence clinical care for patients.

The NTD 2030 road map[2] set out various targets for skin NTDs that include eradication of yaws, elimination (interruption of transmission) of leprosy and onchocerciasis, and elimination as a public health problem of lymphatic filariasis (lymphoedema and hydrocele). Buruli ulcer, cutaneous leishmaniasis, mycetoma, chromoblastomycosis and other deep mycoses (including sporotrichosis), post-kala-azar dermal leishmaniasis, scabies and other ectoparasitoses (including tungiasis) are targeted for control. The related skin NTD strategic framework,[3] published last year, identified potential areas for integration such as surveillance and data management, and staff training for bringing the road map to fruition.

Importantly, the burden of skin diseases in general is receiving better recognition. An estimated 1.8 billion people at any one time are thought to be affected by skin disease globally, with the most common type of skin disease in tropical and low-resource settings being skin infections of all types (bacterial, viral, fungal and parasitic). Within such communities the skin NTDs comprise about 10% of all skin diseases and attempts to effectively diagnose and treat skin NTDs are best addressed by embedding efforts alongside services for all other skin conditions within adequately resourced respective countries' own healthcare systems.

The need for funding at local and global levels is understood and Dr Tedros Ghebreyesus, the WHO Director-General, made a public commitment to ensuring that NTDs are better supported by WHO in terms of resources, policy and advocacy. With his own background in the field of schistosomiasis, another NTD, he stated 'Count me in as one of you: NTDs are where I started. I will follow up on your asks. I don't want the conversations you had this week to be in vain'. With the next global skin NTD meeting scheduled for March 2025, participants are now working hard to maintain this momentum gained.

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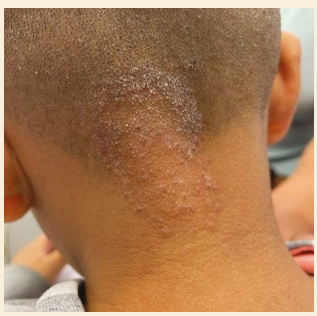
CASE FOR DIAGNOSIS – PART TWO

Question 1 diagnosis answer: (b) Tinea capitis



QUESTION 2: Barbershop tinea capitis is caused by:

a) Microsporum canis b) Trichophyton tonsurans c) Trichophyton mentagrophytes

QUESTION 3: The treatment of barbershop tinea capitis is:

a) Griseofulvin at 20 mg/kg/day for 8–12 weeks
b) Terbinafine at 3–6 mg/kg/day for at least 4 weeks

Answers and discussion on page 15.

CASE REPORT AND REVIEW

Bites and stings from insects. Part 1: introduction, mosquitoes, ants, bees and wasps

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Conflict of interests: None.

Key words: Insect bites; stings; venom; ectoparasite; mosquitoes; ants; bees; wasps; hornets; urticaria; anaphylaxis.

Introduction

Wherever you work worldwide as a health worker, nurse, clinical officer or as a doctor you might be confronted with bites and stings from insects. Especially, inhabitants of tropical or subtropical regions are at risk of diseases transmitted by insects and other arthropods such as spiders and arachnids. The following article will present an overview about some of the most important insects worldwide.

Insect anatomy and feeding habits

Insects are invertebrates with a chitinous exoskeleton; the corpus is divided into three parts (head, thorax and abdomen) and three pairs of legs. The head carries antennae, eyes and mouth parts. Most insects have two pairs of wings, connected by joints to the insect's thorax (Fig. 1 a, b). Some female insects seasonally bite human beings with their tubular mouthparts (proboscis) for certain months during the summer to suck blood. The proboscis pierces the human skin and injects chemical components with the insect's saliva to inhibit blood clotting at the puncture site. Female insects need the haemoproteins and the iron from their blood meal for optimal egg development and viable offspring.

Pool-feeders, like the horsefly *(Tabanus sudeticus)* (Fig. 1c), stable flies *(Stomoxys calcitrans)* and black flies (*Simuliidae*) slice human skin with stiletto-like blades. The emerging blood forms a pool that is absorbed by a sponge-like item in the insect's mouthpart.

Fig 1a. Small tortoiseshell (*Aglais urticae*). © Andreas Montag

Fig 1b. Housefly (*Musca domestica*). © Andreas Montag

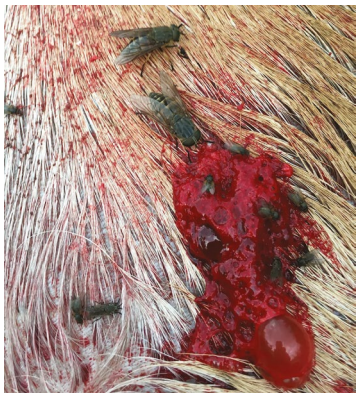

Fig 1c. Horsefly (*Tabanus sudeticus*) and other Diptera, feeding on hunted game. © Andreas Montag

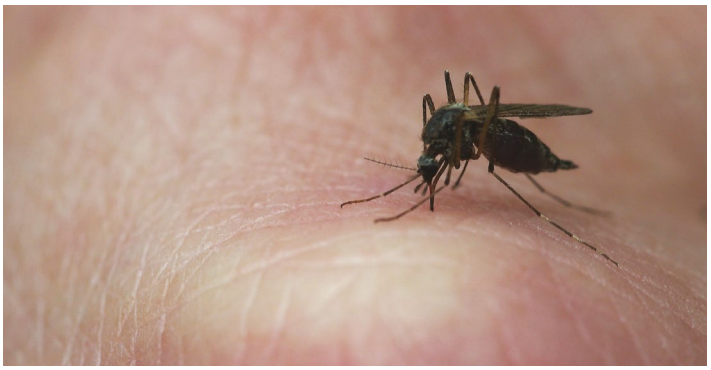

Fig 2a. Biting mosquito. © Andreas Montag

Capillary feeders, like mosquitoes, sting directly into the smallest blood vessels of the host's skin (Fig. 2a). The insect's saliva typically provokes a bite reaction at the puncture site, indicating a local allergic reaction. Some individuals develop a systemic allergic reaction, which extremely rarely results in anaphylaxis.

Other female insect species are equipped with a venomous stinger. This stinger is a modified egg-laying apparatus (ovipositor), attached to a venomous gland, both located at the posterior end of the abdomen. Insect stingers have a sharp ending, and in some cases a serrated surface, e.g. a bee's stinger. Other insects, like some ant subfamilies, lack a sting; they spray their venom instead. Agitated female insects sting or spray human beings, usually in self-defence. Not uncommonly the allergic reaction of a venomous insect sting or spray attack expands systemically and might end in anaphylaxis with possibly fatal consequences. Well known are anaphylactic sting reactions from venomous Hymenoptera, such as bees, wasps and fire ants.

Mosquitoes

Mosquitoes are small flies of about 3600 species worldwide. All mosquitoes seek the waterside, which is their favourite breeding ground. Eggs are laid on the water surface, they hatch into motile larvae that feed on algae and other organic material. The favourite environment of *Anopheles* spp. and *Aedes* spp. is clear, fresh water, mostly to be found in rural areas. *Culex* sp. are less fussy, breeding even in polluted muddy water, mostly to be found in densely populated areas. *Mansonia* sp. breed in ponds and lakes that are the habitat of water hyacinths. Most mosquitoes are active at sunset and night, *Aedes* is active in the day. Mosquitoes are most active

Continued overleaf…

at 15 to 25 °C (60 to 80°F).[1]

Clinical features of mosquito bites

With the bite, the mosquito's saliva provokes a local urticarial sting reaction around the puncture site (Fig. 2b), often transforming into an extremely itchy, red, hard, swollen bump (Fig. 2c), sometimes progressing into an itchy rash. This skin reaction can be interpreted as an allergic reaction. Many mosquito species ingest pathogens from their hosts with the bite and transmit them to the next host with another bite. Mosquitoes are important vectors of important tropical and subtropical diseases. *Anopheles* sp. transmits malaria and filariasis; *Aedes* sp. transmits dengue, yellow fever, Chikungunya, Zika virus disease and West Nile fever; *Culex* sp. transmits West Nile fever and Chikungunya; *Mansonia* sp. transmits Rift Valley fever and filariasis. By transmitting diseases mosquitoes kill more human beings per year than any other animal species, causing more than 700,000 deaths every year, with malaria alone causing 400,000 deaths.[2] There is no risk of contracting HIV or hepatitis from a mosquito bite.

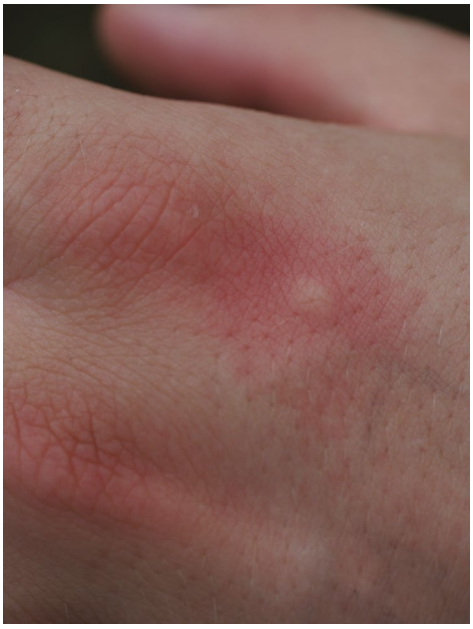

Fig 2b. Urticated lesion caused by mosquito bite. © Andreas Montag

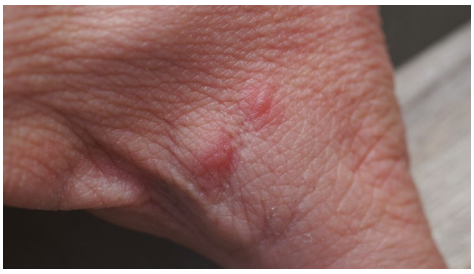

Fig 2b. Urticated lesion caused by mosquito bite. © Andreas Montag

Prevention of mosquito bites

Avoid staying near watersides at sunset or night, especially around standing water. Use insect repellents which should form an aerosol on uncovered skin and on clothing. DEET (*N,N*-Diethyl-3-methylbenzamide) is still the most common and most efficient repellent available and the gold standard in malaria regions. Other recommended repellents are icaridine, ethyl butylacetylaminopropionate, 2-undecanone and PMD (*p*-Menthane-3,8-diol). Essential oils, like lemon eucalyptus from the Australian tree *Corymbia citriodora* seem to have a similar effect to diluted DEET. Other plant-based repellents like neem oil or citronella oils are recommended but seem to be short lived or less effective.[3] Electric insect killers, ('resps', 'bug zappers') should be avoided as they kill all the insects being attracted, they cannot differentiate biting insects from others and have a negative effect on the local ecosystem.

Treatment of mosquito bites

Use warm water and soap to wash the puncture sites. Keep fingernails short and clean. Apply ice packs to provide relief from itching or topical anti-itch medications, such as antihistamines, or topical compounds containing cortisone and antibacterial formulations as over-the-counter products or medical prescriptions. Proprietary electronic "insect bite healers" are effective in fighting the inflammatory insect-bite reaction.

Ants

Ants are predominately venomous social insects belonging to the family Formicidae and, together with the related wasps and bees, are part of the order Hymenoptera. More than 15,700 ant species have been classified worldwide.[4]

Myrmicinae, fire ants

Myrmicinae are known as the biggest ant subfamily with more than 6700 described species,[5] including the venomous genus of fire ants (*Solenopsis* sp.), e.g. the tropical fire ant (*Solenopsis geminata*) (Fig. 3a), native in Central and South America but now with a spread throughout the tropics worldwide. The toxicity of *Solenopsis geminata* is comparable with the venom of the red imported fire ant or RIFA *(Solenopsis invicta)* which is native to Argentina but invaded the Southern states of North America at the beginning of the 20th century. Female Myrmicinae insert their pincer-like mouthparts into human skin to lock themselves firmly. After that they start the stinging attack with the venomous stinger at their posterior abdominal end. The stinger pierces the human skin and injects the myrmicine venom.

Fig 3a. Tropical fire ant (*Solenopsis geminata*), rain forest region, Northern Cambodia. © Andreas Montag

Clinical features of fire ant stings

The main component of fire ants' venom is an alkaloid named solenopsin, responsible for the very painful, inflammatory skin reactions. Fire ant stings start with a local burning sensation, followed by urticaria. The puncture site forms a painful bump within hours, transforming into a white pustule within another 24–36. (Fig. 3b). These pustules will heal spontaneously within a few days. Scratching the affected area paves the way for bacterial infection.[6] Another important allergen of red imported fire ant's venom is Sol i 1, a phospholipase, which can exhibit cross-reactivity with wasp and honey bee venom.

Severe allergic reactions end in anaphylaxis with possibly fatal consequences.[7,8]

Formicinae, weaver ants

Formicinae account for about 3030 species,[9] including wood ants and their relatives (*Formica* spp.), carpenter ants (*Camponotus* spp.), weaver ants (*Oecophylla* spp.) and many

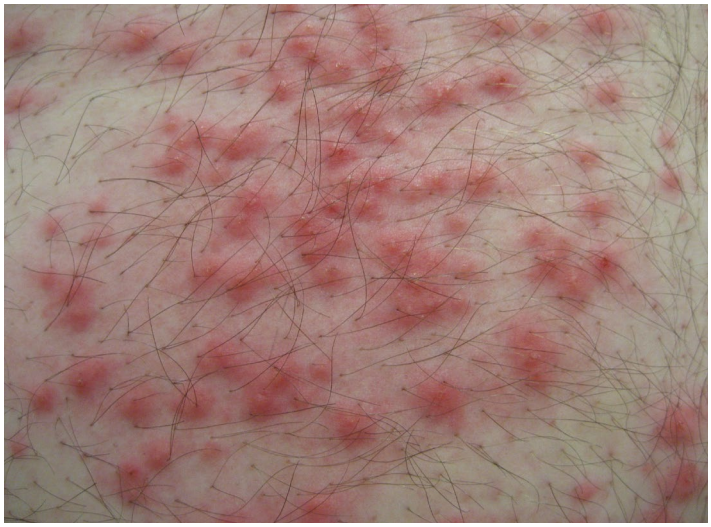

Fig 3b. Stings by a tropical fire ant (*Solenopsis geminata*), rain forest region, Northern Cambodia. © Andreas Montag

more. Female Formicinae, like Asian weaver ants (*Oecophylla smaragdina*) (Fig. 4a) from Cambodia, spray their venom out of a stingless venom gland, located at the lower end of their abdomen, which is bent towards the suspected aggressor

Fig 4a. Ant in defence mode, clear to attack, Asian weaver ant (*Oecophylla smaragdina*), rain forest region, Northern Cambodia. © Andreas Montag

Clinical facts of weaver ant spray attacks

The venom consists of up to 70% formic acid. Contact with human skin provokes a local red burning skin sensation (Fig. 4b), which will disappear spontaneously after a few hours.

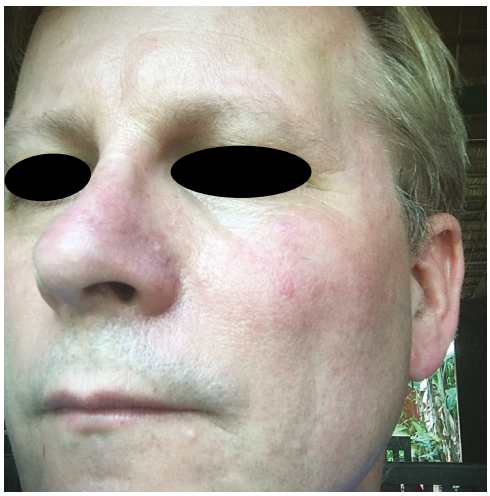

Fig 4b. Venom spray attack, Asian weaver ant (*Oecophylla smaragdina*), rain forest region, Northern Cambodia. © Andreas Montag

Prevention of ant envenomation

Stay away from ant streets (Fig. 5a, b) or colonies of fire ants, weaver ants and any other ants with relevant venom for human beings. Wear protective, insect-bite-resistant clothing. In the case that you are attacked, move away from the ants and brush away the ants from your skin and clothing.

Treatment of ant envenomation

Clean affected areas with diluted soap suds and apply topical steroids, preferably with additional antimicrobial agents, e.g. chlorhexidine (CHX). Be aware of rare but possible cross allergies between imported fire ants and wasps, hornets or honeybees with severe allergic reactions that might end in anaphylaxis with possibly fatal consequences.

Bees, bumblebees, wasps and hornets

Bees (*Apis* spp.) (Figs. 6a, b) and bumblebees (*Bombus spp.*) (Fig. 7) have the typical tripartite insect body with four wings and a typical wasp-like waist. The bee's appearance is slim; the bumblebee is bigger, stocky and carries a fur-like hair-coat. Bees and bumblebees are strict vegetarians, they feed on nectar and pollen. The bee's stinger is large enough to penetrate deep into the dermis, whereas the bumblebee's stinger is small and short. When attacking a human being the serrated bee sting gets stuck in the dermis and rips off the firmly attached venom gland! This

Fig 5a. Ant street, driver ants (*Dorylus nigricans*), rain forest, Kilimanjaro region, Tanzania, Eastern Africa. © Andreas Montag

Fig 5b. Ant street, driver ants (*Dorylus nigricans*), rain forest, Kilimanjaro region, Tanzania, Eastern Africa. © Andreas Montag

Fig 6a. European honey bee (*Apis mellifera*). © Andreas Montag

Continued overleaf…

kills the bee. In contrast, the relatively smooth and short bumblebee stinger slides out of the skin after the attack without injuring the bee. Colloquially, the term 'bee' is usually restricted to the Western honey bee (*Apis mellifera*) (Fig. 6a), which lives in social communities; wild bees are usually solitary. Honeybees (*Apis mellifera* spp.) and the closely related genus of bumblebees (*Bombus* spp.) belong to the superfamily Apoidea, the same as the apoid wasp family Crabronidae. Recent research revealed the evolutionary roots of all living bees within Crabronidae wasps.[10] Among the registered 29 honey bee subspecies, native to Europe, the Middle East and Africa, the Africanized bees (*Apis mellifera* var. *scutellata*) (Fig. 6b) are a hybrid strain of *Apis mellifera* that escaped from experiments crossing European and African subspecies. They are reported to be extraordinarily aggressive (Fig 6c); contact with human beings should be avoided.[10,11]

Fig 6b. Africanized honey bee, syn. African killer bee (*Apis mellifera var. scutellata*), Kilimanjaro region, Tanzania, Eastern Africa. © Friederike Kauer

Fig 7. Garden bumblebee (*Bombus hortorum*). © Andreas Montag

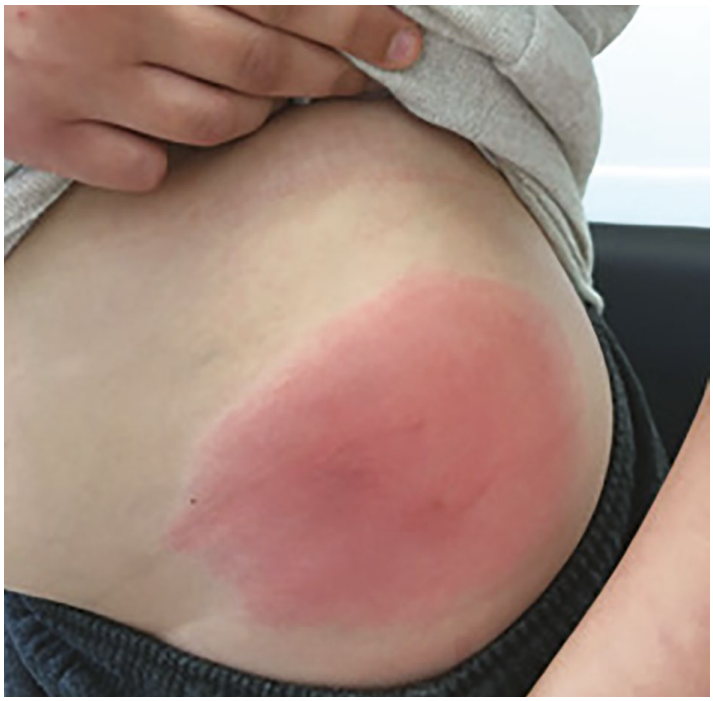

Fig 6c. Sting of an Africanized honey bee, syn. African killer bee (*Apis mellifera var. scutellata*), Kilimanjaro region, Tanzania, Eastern Africa. © Andreas Montag

Fig 8a. German wasp (*Vespula germanica*) building a nest. © Andreas Montag

Fig 8b. German wasp (*Vespula germanica*) cutting slices of ham as prey. © Andreas Montag

Fig 8c. Potter wasp species (*Phimenes flavopictus*) with typical narrow waist (petiole), rain forest region, Northern Cambodia. © Andreas Montag

Similar to bees, the term 'wasps' comprises a vast number of different groups and species. The most commonly known groups of wasps are the genera *Vespula* (Figs. 8a, b) and *Dolichovespula* (in the USA colloquially known as 'yellowjackets'). Potter wasps (Eumeninae) (Fig. 8c) have a typically narrow waist (petiole). The closely related hornets (*Vespa* sp.) (Fig. 9) are similar to ordinary wasps, but they are much larger. Like honeybees and yellowjackets, hornets live socially in nests (Fig. 8a).

Clinical features of venomous stings

Dependent on dose, the venoms of all Hymenoptera are toxic. The painful sting usually provokes a strong local inflammation like a mosquito bite, ranging from local urticarial inflammation (Fig. 8d, e) to inflammatory bullae (culicosis) (Fig. 8f). Honeybee venom is closely related to bumblebee venom, wasp venom is closely related to venoms of other species of yellowjackets (*Vespula* sp. and *Dolichovespula* sp.) as well as to the venom of hornets (*Vespa* sp.)[12] (Fig. 9). Bumblebees and hornets are known to react calmly. They only sting, if they fear for their own life. Stings

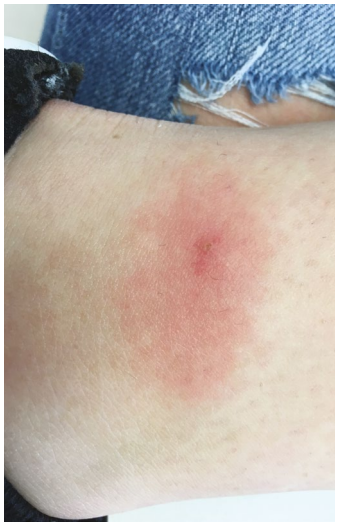

Fig 8d. Sting of an European honey bee (*Apis mellifera*). © Andreas Montag

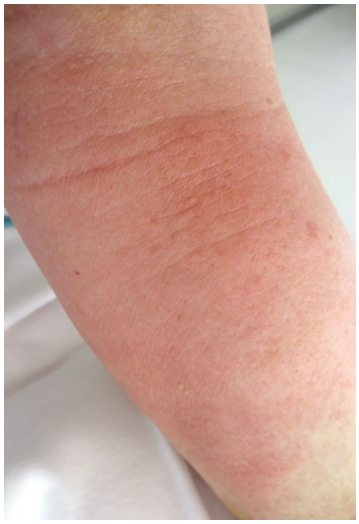

Fig 8e. Wasp's sting, urticarial sting reaction in the ventral ellbow region. © Andreas Montag

of bumblebees are mostly mild and do not need further treatment. Stings of hornets mostly induce severe inflammatory reactions at the puncture site with redness, urticarial oedema, inflammatory heat and pain. Regional expanding skin reactions are classified as hyperergic local skin reactions. Systemic reactions are almost always immediate allergic reactions (anaphylaxis). The prevalence of generalized allergic reactions to insect stings in the general population is 1.2% to 3.5%, and is significantly higher in subpopulations such as beekeepers and outdoor workers. About 50% of patients with a history of Hymenoptera venom anaphylaxis are sensitized to both bee venom and wasp venom.[13]

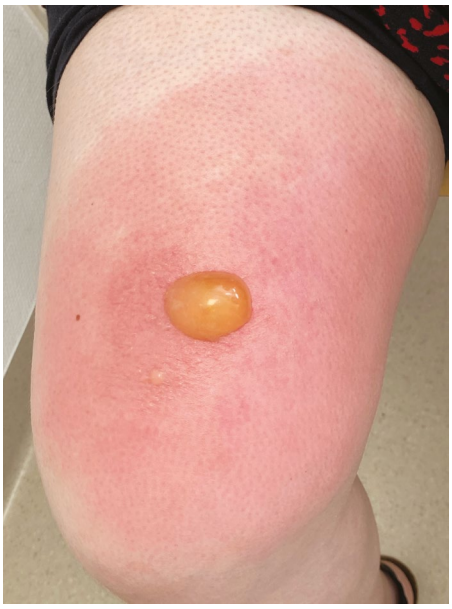

Fig 8f. Wasp's sting, inflammatory bullous reaction in the dorsal upper leg. © Andreas Montag

Fig 9. European hornet (*Vespa crabro*). © Andreas Montag

Prevention and treatment of venomous stings

This is similar to that of ant envenomation. Allergic patients in a potentially life-threatening situation should be provided with an emergency medication (autoinjector for intramuscular epinephrine administration, a fast-acting antihistamine and an oral glucocorticoid). See Box 1 for epinephrine doses to use if epinephrine autoinjectors are not available. Subcutaneous venom immunotherapy (SIT) is the prophylaxis of choice for allergic patients. Because of the risk of anaphylaxis this should only be initiated under emergency conditions in a specialized centre.

Box 1

Recommended doses for intramuscular epinephrine (adrenaline).[14]

Type	Definition
Infants under 10 kg	0.01 mg/kg = 0.01 ml/kg of 1 mg/ml (1:1000)
Children aged 1–5 years	0.15 mg = 0.15 ml of 1 mg/ml (1:1000)
Children aged 6–12 years	0.3 mg = 0.3 ml of 1 mg/ml (1:1000)
Teenagers and adults	0.5 mg = 0.5 ml of 1 mg/ml (1:1000

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SHORT REPORT

A study of the pattern of leprosy (Hansen's disease) in Chhattisgarh, India

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Conflict of interests: None.

Key words: Hansen's disease; Chhattisgarh, India; borderline tuberculoid leprosy.

Introduction

Hansen's disease (leprosy) is considered to be an ancient disease. The reported caseload fell to < 1 case per 10,000 population nationally in December 2005. The condition was declared eradicated in India one-and-a-half decades ago, but has re-emerged in different parts of the country. India now has the highest number of new cases in the world, followed by Brazil and Indonesia. Considering the importance of the disease in the modern era, we have studied data from our outpatient department.

Methods

We performed a retrospective study in which we collected data for patients who visited dermatology outpatients for treatment of leprosy from September 2019 to September 2020. We collected patient demographics and recorded the clinical subtype of leprosy (n = 125). (Figs 1-6).

Results

In our study it was found that borderline tuberculoid leprosy was most common (n = 80 cases), followed by lepromatous leprosy (n = 36), borderline lepromatous (n = 6) and borderline borderline (n = 2) (Table 1). Only one patient had tuberculoid leprosy. Males were more commonly affected than females (Table 2). Out of 125 patients there were 85 males and 40 females. The number of old cases was 77 and there were 48 new cases. The disease affected fewer young people. Only four children and teenagers were affected. The youngest patient was aged 9 years and the oldest was aged 70.

Discussion

Leprosy is a chronic infectious disease caused by *Mycobacterium leprae*. The disease mainly affects the skin, the peripheral nerves, mucosal surfaces of the upper respiratory tract and the eyes.

Leprosy is transmitted by droplets. It is endemic in tropical countries, especially in underdeveloped or developing countries. The prevalence has decreased since the

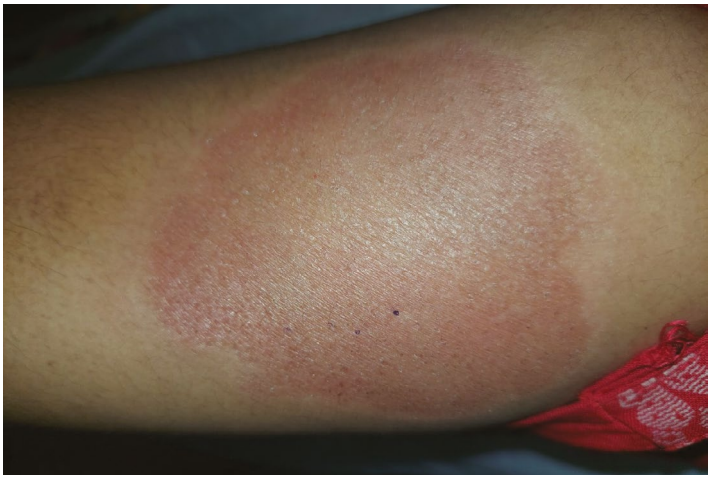

Fig 1. Plaque of tuberculoid leprosy.

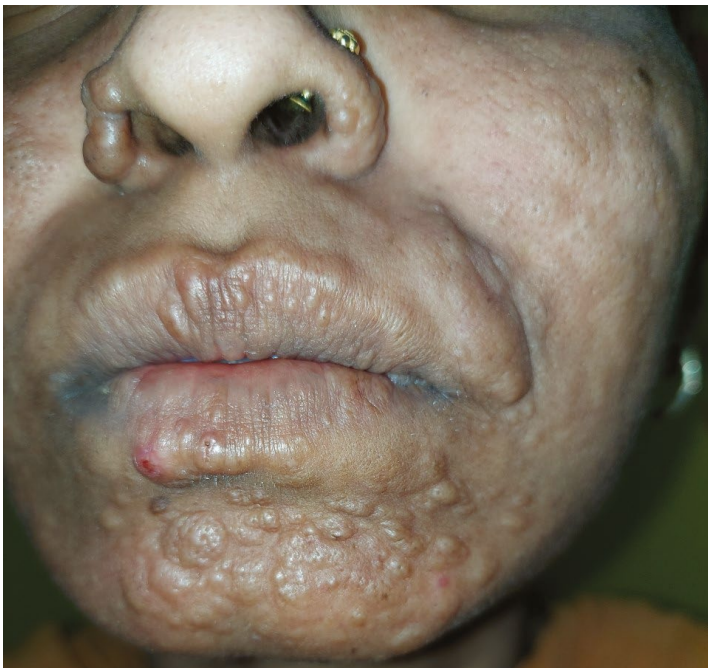

Fig 2. Lesions of lepromatous leprosy involving chin.

Table 1. Distribution of patients according to type of leprosy (n = 125).

Lepromatous	Borderline lepromatous	Borderline borderline	Borderline tuberculoid	Tuberculoid
36	6	2	80	1

Table 2. Demographic distribution of patients (n = 125).

Males, n	Females, n	Old cases, n	New cases, n	Children and teenagers, n
85	40	77	48	4

introduction of multidrug therapy at the beginning of the 1980s.

One hundred and five endemic countries, specifically located in Southeast Asia, in the Americas, Africa, Eastern Pacific and Western Mediterranean, still represent a large number of cases. In 2011, 219,075 new cases were detected worldwide. In the first quarter of 2012, 181,941 new cases were recorded and there was a prevalence of 0.34 cases per 10,000 inhabitants.[1] India ranks first and Brazil ranks second in absolute number of cases.[2] Epidemiological data from some countries, including India, should be interpreted with caution, because the goals of disease elimination were achieved based on some criteria, such as changes in the definition of a 'case', exclusion of recurrent cases from the prevalence rate, exclusion of cases of treatment dropout from active records, single-dose treatment of paucibacillary patients, shorter duration of treatment, etc. This caused a sharp drop in the number of new cases reported.[3]

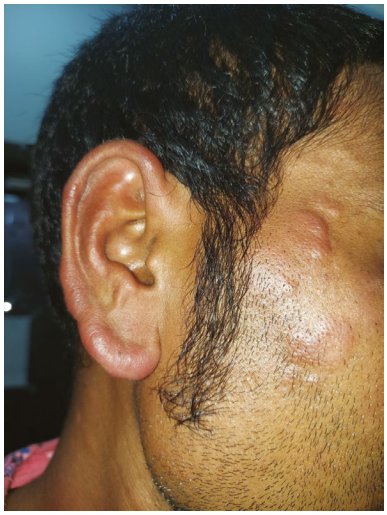

Fig 3. Infiltrative lesions of lepromatous leprosy on right cheek and ear lobe.

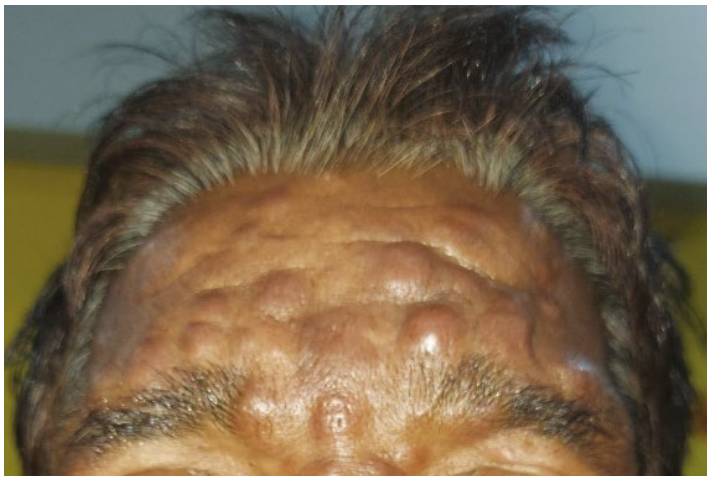

Fig 4. Nodular lesions of lepromatous leprosy on the forehead.

A recent study[4] found that borderline lepromatous leprosy was most common and males were more commonly affected. The youngest patient was 6 years of age and the oldest was 70 years of age. Our study also found that the disease has a male predominance. Leprosy has been commoner in males since the sulfone era, the much increased incidence among males in our study might be attributed to their greater mobility and increased accessibility to healthcare.[5,6] The low percentage of tuberculoid leprosy in our study is similar to observations by Jindal *et al*.[7]

Conclusion

We hereby conclude that leprosy (Hansen's disease) still needs to be eradicated. **Although the incidence has decreased, we still see new cases in our outpatient department**.

Patient awareness, early diagnosis and correct treatment with appropriate counselling can only help India become a leprosy-free nation.

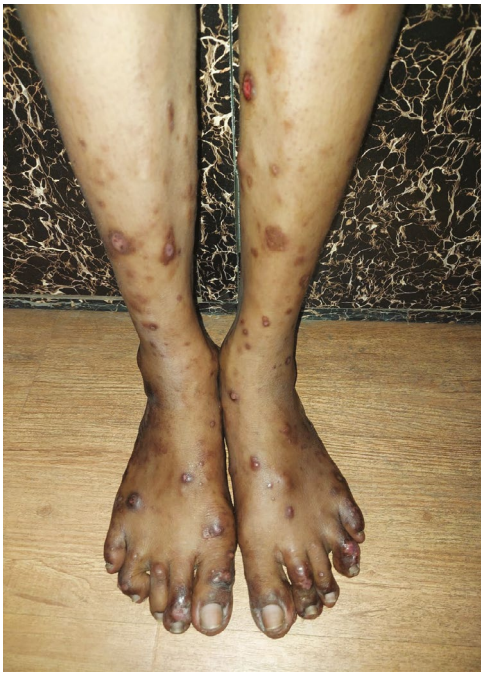

Fig 5. Lepromatous leprosy affecting lower legs.

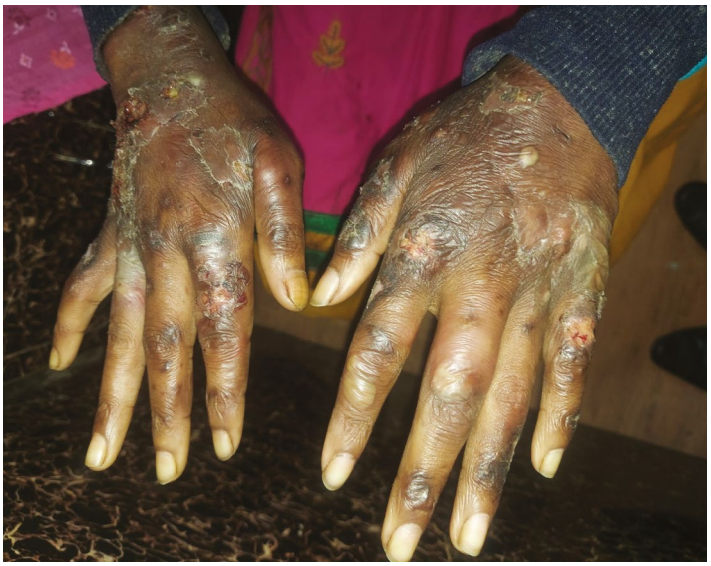

Fig 6. Lepromatous leprosy involving hands.

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ILDS: how the IFD is making a difference in global skin health

The International Foundation for Dermatology (IFD) is the humanitarian arm of the International League of Dermatological Societies (ILDS). The IFD is dedicated to promoting innovation, establishing new partnerships and developing collaborative ways of working towards our vision of accessible, effective and available skin health services for all patients in low-resource areas, irrespective of ethnicity, disability or social background. To help ILDS realize its mission of promoting skin health throughout the world, the IFD supports initiatives in Africa, Oceania, Asia Pacific and South America. We constantly seek novel ways to expand our impact and reach.

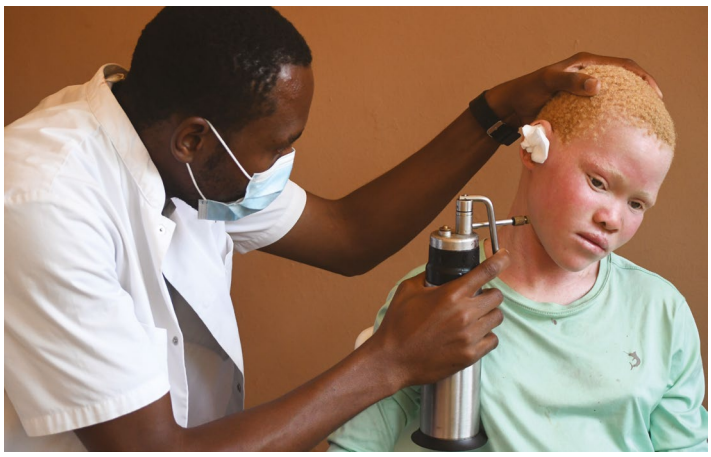
Among these ILDS initiatives, birthed and nurtured through the IFD, are DermLink and the Regional Dermatology Training Centre (RDTC), Tanzania, which have made fantastic strides recently.

DermLink 2022

The IFD offers funding for one-time projects and initiatives that are in low-resource areas and last no longer than 12 months through DermLink grants. This is consistent with the mission of the ILDS, which is to achieve the best possible skin health for all people globally. In 2022, the IFD awarded 10 DermLink grants totalling over $47,000 for projects in nine countries across the continents of Africa, Oceania and Asia through the very kind support of the ILDS member organizations, as member organizations submitted the grant applications to the IFD, either as a project sponsor or to undertake the project directly themselves. As a result of this, since they started near the end of 2022, there has been a direct impact on over 4400 lives and this number continues to rise as several of them are still in progress.

Delegates attending annual International CME conference at RDTC.

The impact of the DermLink 2022 grants cut across the areas shown in Table 1.



Liquid nitrogen cryotherapy for *in situ* cutaneous malignancy in a child with albinism (figure courtesy of Standing Voice).

Regional Dermatology Training Centre, Tanzania

The RDTC in Moshi, Tanzania, is a supra-regional training, research and clinical centre that provides care to dermatological patients and training to medical assistants and clinical officers. The RDTC in Tanzania is the IFD's flagship project. It works in prevention, and to treat and rehabilitate patients with skin cancer and other skin diseases, leprosy and sexually transmitted infections in Eastern Africa. In 2022, the IFD supported and provided scholarships for 19 students on the 2-year Advanced Diploma in DermatoVenereology (ADDV) and provided support for eight key personnel positions; a contribution towards the annual continuing medical education (CME) meeting for past and present students; scholarships for six MMed residents to complete their dermatology training over 5 years, and support for activities on Leprosy Day 2022.

Table 1

DermLink 2022 grants

Project	Supporting member organization
Public Engagement Project on Leprosy in Indonesia	Dutch Society of Dermatology and Venerology
Establishing a Pacific Dermatology Society	Australasian College of Dermatologists
Establishing Albinism Care Centres in Burundi	Tanzania Society for Dermatovenerology
Empowering Health Workers in Malawi	Spanish Academy of Dermatology and Venereology
Therapeutic Education on Atopic Dermatitis in Madagascar	African Society of Dermatology and Venereology
Virtual South-South Educational Program in Tajikistan	Association of Professors of Dermatology
Expanding Dermatology Services in Ethiopia	Dermatological Society of South Africa
Virtual Training on Skin Neglected Tropical Diseases in Nigeria	Nigerian Association of Dermatologists
Establishing an Electronic Data Registry in Sri Lanka	Sri Lanka College of Dermatologists
Building the Capacity of Health Professionals in Malawi	Irish Association of Dermatologists

The recent 28th RDTC International CME Conference and Post Graduate Reunion (11–13 January 2023) was an impressive event that highlighted the remarkable work that the organization is doing to improve skin health education in Africa. It focused on neglected tropical diseases and global health dermatology and was well attended by approximately 300 healthcare practitioners from across Africa. It also featured numerous expert speakers and covered a wide range of skin health issues that frontline health workers in Africa commonly deal with. It was a real celebration of the progress made in skin health education and inspired healthcare practitioners to continue their vital work in the field.

Leprosy contact tracing in Benga Malawi, provided by Dermalawi in partnership with the Spanish Academy of Dermatology and Venereology.

One of the most impressive aspects of the RDTC CME is that it ensures that previous graduates have an opportunity to continue their medical education. In fact, the conference is the only one of its kind in the region. Additionally, current students and residents had the opportunity to present their research and seek advice on challenging cases. The RDTC reimburses past graduates with travel and accommodation costs, making it easier for them to attend. The total reimbursement cost for the last conference was US$32,000, with US$10,000 provided by the IFD.

The recent CME marked a milestone, as this is the first time that attendees from outside Africa have attended in high numbers since the COVID-19 pandemic. In addition to the expert speakers, the RDTC also awarded student prizes to recognize outstanding achievements. The prize funds were supported by the IFD, with each prize winner receiving US$100.

The IFD is grateful for the assistance given by the exceptional people who manage these initiatives in various nations, as well as by the ILDS member organizations, primary contact people, volunteers and local support staff who tirelessly work to make skin health accessible to everyone, especially those in low-resource areas.

QUIZ ANSWERS

Question 2 answer:
(b) Trichophyton tonsurans

Question 3 answer:
(b) Terbinafine at 3–6 mg/kg/day for at least 4 weeks

Discussion

With the increase of barbershops and new haircuts, especially in males, consultations for tinea capitis have increased. In the past 2 years, there has been an increase in cases seen in the dermatology service of the Ramos Mejía Hospital, Buenos Aires, Argentina, with *Trichophyton tonsurans* the most frequent aetiological agent.

Tinea capitis caused by *Trichophyton tonsurans* is a public health problem affecting children in Argentina and in other countries such as Spain. There is an epidemiological relationship between the presence of *T. tonsurans* in barbershops and the prevalence of infection in the population.

Clinically, the lesions are round or oval plaques, with scales, cut hairs at different levels and black dots (Figs 1 and 2).

The diagnosis is confirmed by a mycological study of the lesion. Dermatoscopy could be useful in those hospitals without access to a microbiology service. Scaling, black dots, zigzag hairs and corkscrew hairs are usually seen (Fig. 3).

The treatment of choice is terbinafine 3–6 mg/kg/day. Although current literature suggests a treatment period of 4 weeks, our experience suggests that a longer period is necessary, e.g. for 8-12 weeks. Additional topical therapy such as ketoconazole shampoo is recommended.

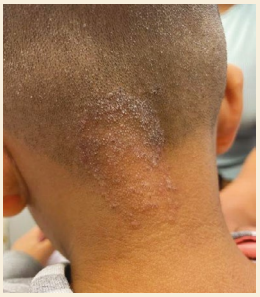


Fig 1.

Fig 2.

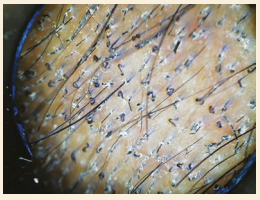


Fig 3.

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Officially founded in 1935, the International League of Dermatological Societies (ILDS) has been promoting skin health around the world for over 80 years. Its forerunner began in 1889 at the first of many World Congresses of Dermatology. Today, the ILDS represents dermatology at the highest level with over 170 members from more than 80 countries; we represent over 200,000 dermatologists.

The International Foundation for Dermatology (IFD) was created in 1987 to carry out the global health dermatology activities of the ILDS. Today, the IFD supports projects in Africa, AsiaPacific and South America. CSH is the official journal of the IFD.

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