

Case Presentation

Epidemioclinical Profile of Inflammatory Ringworm in Children at the Koulikoro Reference Health Centre (Csref)

Abdoulaye Kanoute*, Lamissa Cisse and Ramata Fofana

Department of the Dermatology Hospital, Bamako University of Science and Technology, Mali

Abstract

Introduction: Inflammatory or suppurative ringworm is a rare form of dermatophyte damage to the hair scalp. The aim is to describe the epidemioclinical profile of inflammatory ringworm in children at the Koulikoro Reference Health Centre (Csref).

Methodology: This was a 12-month descriptive cross-sectional study of all cases of Kerions diagnosed in children at the Koulikoro Csref.

Results: Over 12 months, 25 cases were recorded among 1,200 consulting patients, representing a hospital frequency of 2%.

Males were 22 and females three, with a sex ratio of 7.33.

The mean age was 7 years, ranging from 2 to 13 years.

Conclusion: Celse kerions appear to be common in school-age boys, and contact with domestic animals is described in the majority of cases. Further work is needed to describe the fungi responsible and the risk factors.

Introduction

Inflammatory ringworm is a fungal infection that has a marked social impact, affecting the school attendance of infected children. Inflammatory or suppurative ringworm infection is a rare form of dermatophyte damage to the hair scalp. It mainly affects children and adult women, and less frequently men [1].

If not treated early, inflammatory ringworm can lead to scarring alopecia [2]. Kerion accounted for 7.81% of cases in Tunisia in 2017 [3], 3.85% in Algeria in 2016 [4], 4% in Gabon in 2009 [5] and 5.3% of cases in Senegal [6].

In general, kerions are caused by zoophilic dermatophytes such as *T. mentagrophytes*, *T. verrucosum* or *M. canis* [7,8], Deh A, et al. (2021) reported a case of KC in an immunocompetent girl due to *Microsporum audouinii*, an anthropophilic dermatophyte [9], and in Portugal in 2013 by Fernandes, et al. [10]. *Microsporum audouinii* is very often found in scalp ringworms in black Africa, where Coulibaly, et al. [11].

More Information

*Address for correspondence:

Abdoulaye Kanoute, Department of the Dermatology Hospital, Bamako University of Science and Technology, Mali,
Email: abdoulayekanoute70@gmail.com

Submitted: May 20, 2024

Approved: June 08, 2024

Published: June 10, 2024

How to cite this article: Kanoute A, Cisse L, Fofana R. Epidemioclinical Profile of Inflammatory Ringworm in Children at the Koulikoro Reference Health Centre (Csref). *Ann Dermatol Res.* 2024; 8: 012-014.

DOI: 10.29328/journal.adr.1001033

Copyright license: © 2024 Kanoute A, et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.



Ringworm is a contagious disease that mainly affects children and adolescents. Although its prevalence has declined in developed countries, it remains high in developing countries, particularly Mali, and constitutes a public health problem. Few studies have been carried out on the epidemioclinical profile of inflammatory ringworm in children in Mali. We proposed to study the epidemioclinical profile of inflammatory ringworm in children at the Csref of Koulikoro (Mali).

Methodology

Study setting and location

The study was carried out at the Koulikoro Reference Health Centre (Csref).

Type of study

This was a descriptive cross-sectional study of cases of celse kerion.

Study period

This study took place over 1 year (January to December 2023).



Study population

It was represented by patients consulting the Dermatology-Venereology department of the Koulikoro Csref.

Case definition

All patients presented with swollen plaques, which were covered with follicular pustules with adenopathy.

Inclusion criteria: All patients meeting the case definition.

Non-inclusion criteria: Parents who have not given their consent.

Study design

Cases were recruited during dermatological consultations. A general examination was followed by a dermatological examination. Sociodemographic, anamnestic and clinical data were recorded on a survey form.

Data entry and analysis

The data were entered and analyzed on Epi info version 7 French.

Ethical aspects

Informed parental consent was obtained before inclusion. Inclusion did not involve any additional risk for the cases. The anonymity of the cases was guaranteed.

Results

During the study period, we included 25 cases of Kerion de celse among 1200 consulting patients, with a hospital frequency of 2%.

Males were 22 and females three with a sex ratio of 7.33.

The mean age was 7 years, ranging from 2 to 13 years. The 5-14 age group accounted for 76% of cases (19/25), while the 1-4 age group accounted for 24% of cases (6/25). Patients living in rural areas accounted for 80% of cases (20/25). The notion of contact with an animal was found in 80% of cases (20/25). Purulent plaques accounted for 80% of cases (20/25). In 76% of cases (19/25) it was a single lesion. Dermatophytitis of the glabrous skin was reported in 16% of cases (4/25) (Table 1).

Discussion

We carried out a descriptive cross-sectional study over one year on cases of celse kerion in children at the Koulikoro Reference Health Centre. The diagnosis was clinical and anamnestic. The limitations of this study were that only the hospital-based recruitment at the Koulikoro Csref was considered and hence, the limited number of cases were noted.

We report a male predominance with a ratio of 7.3. Our results are in line with the data in the literature, which describes the most frequent cases in boys [12,13].

Table 1: The observations made during the study.

Sr. No.	Age	Sex	Residence	Contact with animal	Type of lesion	Number of lesions	Dermatophytia hair-less shin
1	2	M	Urban	Yes	Plaque	Single	No
2	2	M	Rural	Yes	Nodule	Multiple	Yes
3	3	M	Rural	Yes	Plaque	Single	No
4	3	M	Rural	No	Plaque	Single	No
5	3	F	Rural	Yes	Plaque	Single	Yes
6	4	M	Rural	Yes	Plaque	Single	No
7	5	M	Urban	Yes	Nodule	Multiple	No
8	5	M	Rural	Yes	Plaque	Single	No
9	5	M	Rural	No	Plaque	Single	No
10	6	M	Rural	Yes	Plaque	Single	Yes
11	6	F	Rural	Yes	Plaque	Single	No
12	7	M	Urban	Yes	Nodule	Multiple	No
13	7	M	Rural	No	Plaque	Single	No
14	7	M	Rural	Yes	Plaque	Single	No
15	7	M	Rural	Yes	Plaque	Single	No
16	7	M	Rural	Yes	Plaque	Single	No
17	8	M	Urban	No	Plaque	Single	No
18	8	M	Rural	Yes	Nodule	Multiple	No
19	8	F	Rural	Yes	Plaque	Single	No
20	9	M	Rural	Yes	Plaque	Single	Yes
21	10	M	Rural	Yes	Plaque	Single	No
22	11	M	Rural	Yes	Plaque	Single	No
23	11	M	Rural	Yes	Plaque	Single	No
24	12	M	Rural	No	Nodule	Multiple	No
25	13	M	Urban	Yes	Plaque	Single	No

The under-10 age group was the most represented, with extremes of 2 and 13 years. Aloui et al. [14] and John et al. [14] have also reported a frequency of ringworm in children under the age of ten. Ringworm is usually described in small children because of the immaturity of the immune system.

According to the literature, ringworm is caused by zoophilic fungi. We did not take any mycological samples in our cases, but contact with an animal (cat or dog) would help us to identify this cause. We found contact with animals in 80% of our cases. This notion of contact was described by Aloui et al. [15] in 100% of Kerion cases. Moretti, et al. [16] talk about contact with domestic or stray animals which are often asymptomatic carriers.

Clinically, most of our cases presented with a single lesion consisting of a raised inflammatory plaque dotted with pustules. This is a typical clinical appearance as described by the authors.

The inflammatory aspect remains impressive and is thought to be because these fungi are poorly adapted to humans. It also poses a problem of diagnosis and management, as it may be mistaken for a bacterial infection.

As kerion is a dermatophytic infection, it may be associated with dermatophytosis of the hairless skin. Approximately 16% of our cases had both a dermatophyte infection of the glabrous skin and a dermatophyte infection of the glabrous skin.

Conclusion

Celse kerions appear to be common in school-age boys



who are in contact with domestic animals and are described in the majority of cases. Further work is needed to describe the fungi responsible and the risk factors.

References

1. Sioud Dhrif A, Dhaoui MR, Doss N. Lésion inflammatoire du cuir chevelu [Inflammatory lesion of the scalp]. *Ann Dermatol Venereol*. 2005 Aug-Sep;132(8-9 Pt 1):707-9. French. doi: 10.1016/s0151-9638(05)79425-4. PMID: 16230927.
2. Arenas R, Toussaint S, Isa-Isa R. Kerion and dermatophytic granuloma. Mycological and histopathological findings in 19 children with inflammatory tinea capitis of the scalp. *Int J Dermatol*. 2006 Mar;45(3):215-9. doi: 10.1111/j.1365-4632.2004.02449.x. PMID: 16533218.
3. Kallel A, Hdidder A, Fakhfakh N, Belhadj S, Belhadj-Salah N, Bada N. Ringworms of the scalp: the main mycosis of children. Epidemiological study over 10 years in Tunis. *J Mycol Medical*. 2017; 27(3):345-50.
4. Hamroune Z, Mazouz A, Benelmouffok AB, Kellou D. Evolution of scalp ringworms observed in the mycology laboratory of the Pasteur Institute of Algeria from 1995 to 2015. *Journal of Medical Mycology*. 2016; 26(4):337-44.
5. Nzenze-Afene S, Kendjo E, Bouyou-Akotet M, Mabika Manfoumbi M, Kombila M. Ringworms of the scalp in schools in Libreville, Gabon. *J Mycol Medical*. 2009; 19(3):155-60.
6. Ndiaye M, Diongue K, Seck MC, Badiane AS, Diallo MA, Deme AB. Epidemiological profile of *Tinea capitis* in Dakar (Senegal). A 6-year retrospective study (2008–2013). *J Mycol Medical*. 2015; 25(2):169-76.
7. Elewski BE. *Tinea capitis*: a current perspective. *J Am Acad Dermatol*. 2000 Jan;42(1 Pt 1):1-20; quiz 21-4. doi: 10.1016/s0190-9622(00)90001-x. PMID: 10607315.
8. Patel GA, Schwartz RA. *Tinea capitis*: still an unsolved problem? *Mycoses*. 2011 May;54(3):183-8. doi: 10.1111/j.1439-0507.2009.01819.x. PMID: 20002884.
9. Deh A, Diongue K, Diadie S, Diatta BA, Diop K, Ndour N, Ndiaye M, Diallo M, Niang SO. Kerion celsi due to *Microsporum audouinii*: a severe form in an immunocompetent girl. *Ther Adv Infect Dis*. 2021 Jun 2;8:20499361211020879. doi: 10.1177/20499361211020879. PMID: 34123381; PMCID: PMC8175834.
10. Fernandes S, Amaro C, da Luz Martins M, Inácio J, Araújo T, Vieira R, Silvestre MJ, Cardoso J. Kerion caused by *Microsporum audouinii* in a child. *Med Mycol Case Rep*. 2013 Feb 13;2:52-4. doi: 10.1016/j.mmcr.2013.02.002. PMID: 24432216; PMCID: PMC3885960.
11. Coulibaly O, L'Ollivier C, Piarroux R, Ranque S. Epidemiology of human dermatophytoses in Africa. *Med Mycol*. 2018 Feb 1;56(2):145-161. doi: 10.1093/mmy/myx048. PMID: 28992062.
12. Rim C, Sonia B, Fatma F, Abdelrahmen M, Hamida T. The epidemiological-clinical profile of kerion in children in central Tunisia. *Ann Dermatol Venereology*. 2018; 145(4): A61.
13. Zaraa I, Hawilo A, Aounallah A, Trojjet S, El Euch D, Mokni M, Ben Osman A. Inflammatory *Tinea capitis*: a 12-year study and a review of the literature. *Mycoses*. 2013 Mar;56(2):110-6. doi: 10.1111/j.1439-0507.2012.02219.x. Epub 2012 Jul 3. PMID: 22757767.
14. Aloui D, Bouchekoua M, Trabelsi S, Cheikhrouhou S, Khaled S. Epidemiological profile of ringworm infections recorded at the Charles Nicolle hospital in Tunis. *J Mycol Medical*. 2014; 24(3):e127-8.
15. John AM, Schwartz RA, Janniger CK. The kerion: an angry *tinea capitis*. *Int J Dermatol*. 2018 Jan;57(1):3-9. doi: 10.1111/ijd.13423. Epub 2016 Oct 1. PMID: 27696388.
16. Moretti A, Agnetti F, Mancianti F, Nardoni S, Righi C, Moretta I, Morganti G, Papini M. Dermatophytosis in animals: epidemiological, clinical and zoonotic aspects. *G Ital Dermatol Venereol*. 2013 Dec;148(6):563-72. PMID: 24442037.