CLINICOMYCOLOGICAL STUDY OF TINEA CAPITIS IN DESERT DISTRICT OF RAJASTHAN

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The clinicomycological study was conducted on 200 cases of Tinea capitis in Jodhpur. Incidence of tinea capitis among superficial mycoses was 4.43 and male to female ratio being 1.8:1. Majority of patients were from urban area (88%) and positive family history of dermatophytoses was present in 29% of cases. Majority of patients attended hospital OPD from July to October (39.5%) and January to April (49%). Persons using mustard oil as hair applicant had single or less lesions as compared to individual using other oil. Endothrix involvement of hair was seen in 78% cases and Trichophyton violaceum was predominant fungus (88.5%) recovered on culture.

Key Words: Tinea capitis, Trichophyton violaceum

Introduction

Tinea capitis (T Capitis) is a superficial fungal infection of scalp and hair caused by various species of dermatophytes. The incidence of T capitis varies from country to country and region to region. The first description of 'ringworm' was given by Powell in 1900.[1] Several studies have been reported from various regions of India.[2-8] T capitis from Rajasthan was reported from Udaipur and Jaipur.[9-11] However no such study has been reported from Jodhpur so far. Therefore present study was undertaken with the aim to find out its incidence, clinical presentation, age and sex distribution, seasonal variation, role of hair oil, if any, in prevention of T capitis. This study was also aimed to find out aetiological agent and its relation to type of lesions.

Materials and Methods

The study was conducted on 200 clinically diagnosed cases of T capitis attended Skin OPD of Mathura Dass Mathur Hospital attached to Dr S N Medical College, Jodhpur during the period of 13 months that is from March to March. Detailed history was taken in relation to age, sex, duration of illness, family history of superficial dermatophytoses and history of hair oil application. Clinical examination of lesion included number, types of lesions, scaling, presence of crusts or pustules, scarring, black dot appearance and hair lusture etc.

Mycological study was conducted on each case included direct KOH preparation. The specimens were obtained by scraping and epilated hairs were subjected to 15-20% KOH mount for direct demonstration of fungal elements.

Culture of specimen was done on Sabouraud's agar with Gentamicin and Actidione. After incubation, the media were kept in BOD incubator and examined daily for appearance of growth. The growth, if appeared, was identified by its colony character and microscopic morphology in lactophenol blue preparation viz. type of hyphae, shape and size of macroconidia and microconidia.[12]

Results

A total of 200 patients of T capitis were evaluated for clinical presentation, age and sex

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distribution, seasonal variation, type of hair oil used and type of fungi isolated from the lesions.

The study revaled that out of 4510 patients of superficial mycoses, the cases of T capitis were 200 (4.43%). It has been observed that majority of cases (85.5%) of T capitis were in the age group 3-10 years (Table I). Percentage of T capitis in female was 35.5%, whereas in male it was 64.5%, hence male : female ratio was 1.8:1. Majority of T capitis cases were from urban area (88%) and family history of dermatophytoses was present in 29% of cases.

Table I. Age and Sex distribution of 200 cases of Tinea capitis

Age (in years)	Female	Male	Total	%
0 - 1	1	2	3	1.5
1 - 2	0	1	1	0.5
2 - 3	3	4	7	3.5
3 - 4	11	17	28	14.0
4 - 5	8	11	19	9.5
5 - 6	12	18	30	15.0
6 - 7	9	14	23	11.5
7 - 8	14	19	33	16.5
8 - 9	5	8	13	6.5
9 - 10	3	22	25	12.4
10 - 11	2	5	7	3.5
11 - 12	3	4	7	3.5
12	0	4	4	2.0
Total	71	129	200	100.0

Table II shows seasonal incidence of cases of T capitis. Incidence of disease is slightly higher (49.0%) in post monsoon period (July-October), but the percentage of cases from January to April was also high (41.2%).

Table II. Seasonal incidence in case of tinea capitis

Month	No. of patients	Percentage
March	31	15.5 (2 mnth)
April	11	5.5
May	8	4.0
June	6	3.0
July	20	10.0
August	19	9.5
September	19	9.5
October	21	10.5
November	5	2.5
December	4	2.0
January	18	9.0
February	38	19.0
Total	200	100.00

The average percentage of March month i.e. 7.7 was taken as study included cases coming in months from March to March (13 months). Incidence was low, 7% and 4.5% in extreme summer (May-June) and begining of winter (Novermber-December) respectively.

Clinical presentation of disease revealed that black dot to be the commonest (57%) followed by grey patch (34%),kerion (8%) and favus type was the least (1%).

Table III shows relationship between number of lesions and type of oil used by patients. It was observed that out of 48 patients using mustard oil, multiple lesions were seen only in 35.4% cases, whereas 77.5% patients out of 49 cases using coconut oil got more lesions.

Direct microscopy of hair in KOH preparations revealed that all clinically

Table III. Relationship between number of lesions and type of oil used by patients

Number of lesion	Number of case				
	Coconut oil	Mustard oil	Ground oil	Amla oil	Others
Single	11	31	-	6	20
Multiple	38	17	27	19	31
Total	49	48	27	25	51

suspected patients of T capitis had endothrix type in 78% of cases and ectothrix type in 22%. As shown in Table IV, percentage of endothrix infection in black dot type was 57%, grey patch 17%, Kerion 3% and favus 1%, whereas ectothrix hair involvement was seen only in grey patch (17%) and kerion (5%). It was not observed in black dot and favus types.

Table IV. Correlation of finding of KOH preparation, culture examination and clinical tyeps

Clinical	KOH				Culture			
	Endo.		Ecto.		Positive		Negative	
	No.	%	No.	%	No.	%	No.	%
Black dot	114	57.0	-	-	89	44.5	25	12.5
Grey pathc	34	17.0	34	17.0	24	12.0	44	22.0
Kerion	6	3.0	10	5.0	9	4.5	7	3.5
Favus	2	1.0	-	-	-	-	2	1.0

Fungi was recovered on culture in 61% out of 200 KOH positive cases. The recovery of fungus was maximum in black dot type 44.5%. Percentage for grey patch and kerion type was 12% and 4.5% respectively. Out of 122 positive cultures, recovery of T violaceum was maximum 88.5% and T tonsurans was minimum 0.9%. T mentagrophyte was isolated from 10.6% of cases. It was observed that T violaceum was main isolate from black dot type while T mentagrophyte was the main isolate from grey patch and kerion lesions.

Comments

The clinicomycological study revealed that incidence of T capitis was 4.43% out of total patients having superficial mycoses. This finding was similar to that observed by other workers.[7,8] while highest incidence was reported in other studies.[9-11] This difference may be due to different parts of country. However, in this area dry arid climate may be responsible for low incidence.

Most of T capitis patients (85.5%) were seen in children as observed by other workrs.[6,8]

Male preponderance of T capitis observed in our study (male:female ratio 1.8:1) was also seen in other studies.[6,8] The low frequency in the females could be due to custom of regular application of vegetable oil over the scalp which has fungistatic properties. Awareness in patients regarding disease was good (88%) in urban areas compared to rural population (12%). Family history of T capitis which was seen in 29% of patients may be due to sharing of articles like towels, combs, cloth cap etc. by other family members.

The high incidence of T capitis (39.5%) observed after post monsoon period in present study was also observed by Kandhari and Sethi.[13] The low incidence in extreme summer may be due to dry and arid climate of Jodhpur. But this finding was contrary to the finding of Shah et al.[5] They observed maximum incidence during summer.

The use of different types of hair oil in different regions may be a factor responsible for variation in type and number of lesions and incidence of T capitis. It has been seen that more than one lesion is seen with less frequency in persons using mustard oil (Table III). It may be that mustard oil inhibits the growth of dermatophytes in vitro and also prevents penetration of hair by dermatophyte.[14]

Black dot type T capitis was found to be

common clinical presentation (57%) followed by grey patch (34%), kerion (8%) and favus (1%) respectively. This finding was also observed in previous studies[2,7] but in other studies black dot presentation was not common.[9,11] The cause could be that clinical presentation of T capitis mainly depends upon the species of dermatophytes causing scalp infection.

In a study results of microscopic examination of hair in KOH mount when correlated with culture, it was seen that majority of dermatophytes isolated was T violaceum which caused endothrix type of hair infection.[12] This finding was also observed in present study (78%). The high isolation rate (61%) of dermatophytes on culture seen in present study was also similar to the findings of other workers.[2,3]

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