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Improper Use of Topical Corticosteroids in Tinea Infections in a Tertiary Care Hospital

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ABSTRACT

Background: Steroid-modified tinea, also known as tinea incognito, is an infection by the dermatophytes, where the clinical morphology is modified due to corticosteroids, either systemic or topical. Rampant use of topical corticosteroids has led to increasing recurrence in tinea infections.

Methods: All consenting cases of tinea presenting to outpatient department of dermatology department of Civil Service Hospital from March to August 2020 for a total of 6 months were included in this study. Tinea infection involving only the palms, soles, nails or scalp were excluded.

Results: A total of 200 patients were included in this study. Among these, 175 patients (87.5%) were using topical corticosteroids. A significant association was noted between dermatophyte infection of more than one month and topical corticosteroids use ($p<0.05$). This study revealed that males were using super-potent topical corticosteroids more as compared to females ($p<0.05$). Moreover, no association was noted between the level of education attained and the use of topical corticosteroids ($p=0.91$). Only 25 (12%) patients were either using correct or no topical medications during the time of consultation with the dermatologist. Among the patients using topical corticosteroids, 155 (88.6%) patients were using them on recommendation of the local pharmacist and only 2 (1.2%) patients were prescribed by a physician.

Conclusions: In short, use of topical steroids was rampant among patients with tinea whilst 77.5% patients procured steroid topicals over-the-counter. Hence, a tougher law and strict regulatory guidelines deemed necessary to curb the unauthorized and rampant sale of these medicines.

Keywords: Dermatophytes; over-the-counter; steroid misuse; self-medications; tinea; topical corticosteroid

INTRODUCTION

Tinea or commonly known as ringworm infections are infections caused by any of the three related asexual moulds or dermatophytes.[1] Tinea infections are classified according to the site of involvement.[2] Typically, a tinea infection presents with an annular plaque with erythematous raised border with central clearing.[3] The use of topical corticosteroids (TCs) suppresses the inflammation and subsequently the clinical features of Tinea only to recur when treatment stopped.[4,5]

There many published literature on misuse of TCs all over the world since the advent of topical corticosteroids in early 1950s.[4,6-9] But, it is more rampant in our subcontinent.[10] Many studies conducted in different parts of the country have found self-medication and medication by retailers, a common practice in Nepal.[11-14] This practice is even more in cases of skin diseases.[15]

The main objective of this study was to find the prevalence of misuse of TCs in dermatophyte infections.

METHODS

This was a cross-sectional observational study conducted in the out-patient department of dermatology at Civil Service Hospital from March 2020 to August 2020. Convenience sampling method was used to include participants. All consecutive patients with the clinical diagnosis of tinea were included in the period of six months. Exclusion criteria included tinea infections involving only the scalp, nails, palms or soles, patient on oral steroid or other immunosuppressive medication and patient not able to recall the previous medication being used.

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A detailed self-prepared form was filled up regarding the past medications, the duration of treatment, source of medicine and the reason for not seeing dermatologist at the first place were taken from all patients with Tinea infections after obtaining a verbal consent from the patients and from parents in case of minors. The use of TCs and their strength was ascertained on the basis of patient identifying the medicine shown by the investigator at the OPD or samples brought by the patient himself/herself as proof of use. The diagnosis of tinea was made clinically by the single dermatologist (SP), based on the typical features of annular or polycyclic, scaly plaques with central clearing. In cases atypical or difficult to diagnosis a KOH 10% preparation was sent.

The data obtained from the patient was collected, checked and entered in the Microsoft excel and frequency and percentages were calculated. Pearson's Chi square or Fisher's exact tests were used to analyze association between the variables using Statistical package for the social science (SPSS) version 16.

The study was conducted after the Institution Review Committee approved the proposal. (IRB Protocol No. 17/2020)

RESULTS

The most common age group seeking treatment for dermatophytosis was 21-30 years of age. Males (71.5%) were more common as compared to females (28.5%) (Table 1). Students (39.5%), comprised the most number of cases. More than half (52%) of patients were university graduates.

Table 1. Table showing demographics of patients.

Characteristics	Number (%)
Age Group (in years)	
Less than 10	2 (1.0)
11-20	61 (30.5)
21-30	69 (34.5)
31-40	35 (17.5)
41-50	20 (10.0)
>51	13 (6.5)
Sex	
Male	143 (71.5)
Female	57 (28.5)
Occupation	
Students	79 (39.5)
Housewife	38 (19.0)
Govt. employee	51 (25.5)
Others	32 (16.0)
Education	
Less than grade 10	13 (6.5)
Grade 10-12	83 (41.5)
University degree	104 (52.00

The combination of involvement of crural folds and the other glabrous skin was the commonest variety with 51%, while extensive tinea was seen in 15% of patients. A total of 107 (53.5%) patients had dermatophytosis for the duration of at least 1 month and a positive family history of Tinea infections was reported in 42 (21%) patients (Table 2).

Table 2. Table showing the disease characteristics.

Diagnosis	Number (% of total)
Tinea corporis plus cruris	102 (51.0)
Tinea cruris	55 (27.5)
Tinea corporis (facei included)	13 (6.5)
Extensive (More than two sites involved)	30 (15)
Duration (in months)	
Less than 1 month	66 (33)
1-6 month	107 (53.5)
More than 6 months till 12 months	20 (10.0)
More than 12 months	7 (3.5)
Family history	
Yes	42 (21.0)
No	158 (79.0)

Most of the patients, 175 (87.5%) were already using TCs either alone or in combination at the time of consultation (Table 3).

Table 3. Table showing the TCs use, strength of TCs, source of medicine prescription, reason for not consulting a dermatologist and side-effects of TCs.

Variables	Number of patients (%)	
Current treatments	**Total (%)**	
None	13 (6.5)	
Only antifungals	12 (6%)	
Multidrug combination with steroid	175 (87.5)	
Strength of steroid used	**Patients using TCs (n=175) (%)**	**Percentage among the total patients (n=200)**
Mid-Potent	101 (57.7)	50.5
Super-Potent	70 (40.0)	35.0
Mild	4 (2.3)	2.0

Source of steroid creams		
Pharmacy	155 (88.6)	77.5
Friends	12 (6.8)	6.0
Relatives	6 (3.4)	3.0
Doctor	2 (1.2)	1.0
Reason for not visiting dermatologist		
Busy	83 (47.4)	41.5
Somebody got better with same medicine	42 (24.0)	21.0
Recurrence after dermatologist's treatment	12 (6.9)	6.0
Shame	23 (13.1)	11.5
Others	15 (8.6)	7.5
Side effects of TCs		
None	36 (20.6)	18.0
Redness and dryness	42 (24.0)	21.0
Pyodermas	60 (34.3)	30.0
Stria and atrophy	37 (21.1)	18.5

A total of 101 (57.7%) patients were using mid-potent topical corticosteroids namely betamethasone valerate and beclomethasone dipropionate creams. Super-potent topical steroid namely clobetasol and halobetasol were used by 70 (40%) patients whereas the remaining were using low potent steroids like hydrocortisone and triamcinolone (Table 3).

A total of 155 (88.6%) patients were using TCs on recommendation of the local pharmacist. And the reason for not seeking a dermatologist's opinion was patient's busy schedule in almost half of the cases, 83 (47.4%) (Table 3).

Statistical analysis (Table 4) using Chi-Square test showed level of education did not alter the choice of treatment in fungal infections (p= 0.91). A longer duration of disease in patient (>1month) was associated with a significantly higher chance of using TCs (p<0.001). Both sexes preferred TCs for the treatment of their tinea (p=0.314). All occupations were using TCs more commonly than antifungal or no treatment. But, students were more likely to use antifungal or no treatment before visiting dermatologist (p <0.001). The males were significantly more likely to use super-potent TCs as compared to females.

Table 4. Table showing statistical analysis using Chi-Square test on pattern of treatment against different variables.

Education level	Treatment n (%)		Total n (%)	P value
	Antifungal/ none	TC		
>10 grade	24 (12.8%)	163 (87.2%)	187 (100)	0.914
<10 grade	1(7.7%)	12 (92.3%)	13 (100)	
Duration of disease				
>1 month	1 (0.7)	133 (99.3)	134 (100)	<0.001
<1month	24 (36.4)	42 (63.6)	66 (100)	
Sex				
Male	20 (14)	123 (86)	143 (100)	0.314
Female	5 (8.8)	52 (91.2)	57 (100)	
Occupation				
Students	19 (24.1)	60 (75.9)	79 (100)	<0.001
All others	6 (5)	115 (95)	121 (100)	
Sex according to TCs use	**Mild or Potent TCs**	**Super-potent TCs**		
Male	66 (53.7)	57 (46.3)	123 (100)	0.008
Female	39 (75)	13 (25)	52 (100)	

The common side-effects in patients using TCs were pyodermas in 60 (34.3%) patients, redness and xerosis in 42 (24.0%) patients and atrophy with striae in 37 (21.1%) patients over the site of application.

DISCUSSION

The most common age group of the patients with tinea infection was from age group of 10-30 years which is similar to the previous studies.[6,16] Males were more commonly affected in our study compared to females. Males may be more infected due to high mobility, outdoor work in more humid conditions or selection of occluding clothes.

The most common type of tinea infection in our study was the combination of cruris and corporis, followed by cruris alone and followed by involvement of multiple sites. The commonest sites of infections have been different in different regions of the world. Tinea pedis was the most common type of dermatophyte infection conducted in Damascus, Syria,[17] whereas it was tinea capitis in Egypt.[18] Tinea cruris was the most common types in studies from Nepal and Iran.[6,16] A study from India found the face as the commonest site of tinea incognito.[19] These showed that the infections are commonly in any part but certainly may depend on the occupation and the weather conditions of those

particular places.

Since the advent of the topical corticosteroids in 1950s their misuse has been seen in different conditions throughout the world most commonly over the face. One of the earliest description of misuse of topical steroid in fungal infections was found in publication of Ive et.al.[5] Our study showed that 87.5% were using steroid creams for the treatment of their dermatophyte infections and only 12.5% were using proper antifungal only or no treatment during their visit to dermatologist. The prevalence of TCs in this study was higher than the prevalence of topical steroid use found in the study by Poudyal et.al,[6] where it was 60.3%, and Mahar et.al,[7] which was even less (38%). Similarly, this was also higher than studies conducted in India by Thomas et.al,[20] (70%) and Meena et. al,[21] (52.4%). Patients of tinea infections in Kathmandu are more frequently using TCs in comparison to the similar cities in North and Central India and even a rural town of western Nepal. This could probably be due to ignorance regarding this problem, easy availability of TCs over the counter and busy city life.

Most of the patients in our study obtained the topical steroids from the recommendation of local pharmacies (77.5%). Pharmacists were also found to be the most common source for recommending TCs in studies from India by Thomas et.al,[20] Dutta et.al,[19] and Sharma et.al.[22] Pharmacists seem to be the first contact of most of the patients with tinea infections. But their inappropriate treatment is contributing largely to this steroid-menace.

However, Mahar et.al,[7] revealed relatives and friends were the most common source (33.2%), which was similar to study conducted by Parajuli et.al,[9] which also found friends (38.5%) were the most common source of TCs. These studies included all patients with steroid misuse including cosmetics purposes. But in this study, only 6% of the patients obtained TCs on friends' recommendation. Probably people don't want to get opinion about this condition with friends as it frequently involves private parts as well.

Use of potent steroids like betamethasone or beclomethasone mostly in combination were most commonly used (57.7%), closely followed by clobetasol propionate and halobetasol (40%) creams in our study. The most common TCs used have varied with beclomethasone dipropionate in one of the study conducted in Western Nepal[8] whereas studies conducted in India has shown similar results with either clobetasol proprionate or betamethasone as the most commonly OTC TCs being used.[20,22] Several fixed drug combinations marketed by many pharmaceutical companies consist of these potent agents and lax rules regarding the sale of these medications has made the problem dreadful.

The misuse of topical corticosteroids in tinea is considered the single most important factor in the recurrent and chronic dermatophytosis in the countries of Indian sub-continent.[23] Indian Society of Dermatologists (IADVL) has formed a taskforce to regulate the sale of steroid containing fixed drug combinations from over the counter and they have found some success.[24]

Nepal needs to create awareness in public and make strict policies to regulate or even prohibit the sale of such drugs from the pharmacies without prescription of a registered medical practitioners. Prohibition of sale of steroid containing creams in online retails is also must. A task-force comprising members of the national dermatologists society may be formed to advise government agencies regarding this problem.

This is an urban hospital based study and may not represent the entire community. The problem with self-medications in rural communities may be different. Larger community based studies could show the actual menace of self-medication practice.

CONCLUSIONS

Majority of people (87.5%) with tinea were using some form of topical steroids before visiting a dermatologist. This rampant use of steroid creams in fungal infections may have disastrous effects. Pharmacists were prescribing steroid creams to the patients of tinea infections in 77.5% of cases. The public and pharmacists should be better educated regarding the complications of steroid creams misuse. The tougher law and strict regulatory guidelines deemed necessary to curb the unauthorized and unjustifiable sale of these topical steroids to the patients as an over the counter medicine.

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