CLINICAL AND MICROBIOLOGICAL STUDY OF SCALY SCALP IN PRESCHOOL CHILDREN

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ABSTRACT

Background: Scaling of scalp is a common feature of many skin diseases and can be observed in different ages. Despite the diversity of causes of scaly scalp in preschool age group, there are few studies to document the etiologies of scalp scaling in preschool children.

Objective: To categorize the cases of scaly scalp in preschool children in our locality on clinical and microbiological bases.

Methods: Fifty child of preschool age, having scaly scalp from Dermatology outpatient clinic of Mansoura university hospital, were subjected to thorough history taking and clinical dermatologic examination for the lesions of the scalp and any other associated dermatological lesions anywhere in the body. Scales and hairs from the scaly scalp lesions were obtained and subjected to direct microscopic examination using KOH and culture on Sabouraud's dextrose agar with chloramphenicol, with and without cyclohexamide. The growth was identified by macroscopic & microscopic characters.

Results: Ages of the studied patients were from 3 months up to 5.5 years. Thirty six percent of them were infants while 64% were in the 2-6 years age group. The most common cause of scaly scalp found was T. capititis (62%), then seborrhoeic dermatitis (24%), psoriasis (10%) and lastly atopic dermatitis and PRP (2% each).
There are reports that approximately half of all children with atopic dermatitis may manifest scaly scalp as found in children from birth to 12 years. (12)

Despite the diversity of causes of scaly scalp in preschool age group, there are few studies to document the prevalence and etiologies of scalp scaling in children. This study was done aiming at categorizing the cases of scaly scalp in preschool children in our locality on clinical and microbiological bases.

SUBJECTS AND METHODS

This study was conducted on 50 patients at preschool age who attended the dermatology outpatient clinic of Mansoura University Hospital in the period from January to July 2005, and having scaly scalp. Any patient with history of intake of any topical or systemic treatment in the last month was excluded from this study.

Clinical evaluation:
The patients were subjected to thorough history taking with special stress on age, sex, residence, course, duration, recurrence and if recurrent what is the response to previous treatment, exposure to animals or any patient with scaly scalp, whether going to kinder garden or not, family history of scaly scalp and past history of similar condition.

Physical examination was performed to determine the configuration of the lesion whether diffuse or localized, and if localized whether single lesion or multiple lesions and morphology of scales whether white fine scales, yellowish scales or yellowish minute crusts. Also, underlying erythema was noted. The face, neck, trunk and extremities were examined for associated skin eruptions. Nails were examined for any pathology.

Mycological examination:
- Collection of specimen:
The specimen were obtained from the scales on the affected scalp by the side of sterile glass slide which is considered the most convenient method of scraping (13) and were collected into folded squares of paper. Scraping with scalpel blade was not used as it causes fright to the pediatric patient. Affected hairs are plucked.
confirmation of the results.

**Clinical diagnosis:**
Diagnosis of the studied cases was determined according to the following criteria.

Tinea capitis was diagnosed in all cases with positive mycological examination whether with localized or diffuse scaling and with or without hair loss.

Seborrhoeic dermatitis was diagnosed in presence of greasy scales over scalp, eyebrows, nasolabial folds, cheeks, ears, presternal and interscapular regions and the direct microscopic examination and cultures of these cases were negative.

Psoriasis was diagnosed in presence of sharply demarcated erythematous plaques covered by silvery white scales whether affecting the scalp only or affecting also other parts of the body and the mycological examination revealed negative results.

Atopic dermatitis was diagnosed if scaly scalp associated with typical clinical features of areas of severe pruritus, erythema and excoriation mainly over flexural surfaces or cheeks. The direct microscopic examination and culture should be negative.

Pityriasis rubra pilaris was diagnosed if the scaly scalp is associated with other features of pityriasis rubra pilaris as psoriasiform plaques, follicular papules, palmoplantar keratoderma, and at the same time the mycological examination revealed negative results.

**Statistical analysis:**
Clinical and laboratory data of this study were tabulated and statistically analyzed by SPSS version 10 for Windows software (SPSS Inc, Chicago, IL, USA). Differences between the groups were tested using chi-square. The level of significance for the statistical tests was set at $P < 0.05$.

**RESULTS**
A total of 50 patients of preschool age with scaly scalp were collected and studied. As regard the age distribution of studied cases, the smallest age was 3 months and the oldest age
partial hair loss, broken hairs and fine white scales and show positive results on reculture.

As regard the species of isolated dermatophytes from T. capitis cases, Trichophyton violaceum (Fig. 2 & 3) was the commonest dermatophyte that was isolated from 21 cases (77.8%). Microsporum canis is the second common dermatophyte being isolated from 4 cases (14.8%) followed by Trichophyton mentagrophytes that was isolated from 2 cases (7.4%).

Table 1: Demographics by the different causes of the scaly scalp in preschool age children

<table>
<thead>
<tr>
<th></th>
<th>T. capitis No= (31)</th>
<th>Seborrheic dermatitis No= (12)</th>
<th>Psoriasis No= (5)</th>
<th>P.R.P No= (1)</th>
<th>Atopic dermatitis No= (1)</th>
<th>X^2</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age: Infants</td>
<td></td>
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<td></td>
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<tr>
<td>(18)</td>
<td>5 (27.8%)</td>
<td>12 (66.7%)</td>
<td></td>
<td></td>
<td>1 (5.6%)</td>
<td>17.24</td>
<td>0.001</td>
</tr>
<tr>
<td>2-6 years</td>
<td>26 (81.3%)</td>
<td></td>
<td>5 (15.6%)</td>
<td>1 (3.1%)</td>
<td></td>
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<td>(32)</td>
<td></td>
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<tr>
<td>Sex: Boys (39)</td>
<td>24 (61.5%)</td>
<td>11 (28.2%)</td>
<td>4 (10.3%)</td>
<td></td>
<td></td>
<td>0.420</td>
<td>0.52</td>
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<tr>
<td>Girls (11)</td>
<td>7 (63.6%)</td>
<td>1 (9.1%)</td>
<td>1 (9.1%)</td>
<td>1 (9.1%)</td>
<td>1 (9.1%)</td>
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<td>Residence:</td>
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<tr>
<td>Rural (41)</td>
<td>25 (61%)</td>
<td>10 (24.4%)</td>
<td>4 (9.8%)</td>
<td>1 (2.4%)</td>
<td>1 (2.4%)</td>
<td>1.26</td>
<td>0.26</td>
</tr>
<tr>
<td>Urban (9)</td>
<td>6 (66.7%)</td>
<td>2 (22.2%)</td>
<td>1 (11.1%)</td>
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</tbody>
</table>

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Fig 1: Distribution of the different causes of scaly scalp in both infant and 2-6 years age groups

![Bar graph showing distribution of causes of scaly scalp in infants and 2-6 years age group.]

Fig 2: Macroscopic appearance of Trichophyton violaceum isolated from scaly scalp patient (slope)

![Image of Trichophyton violaceum slope.]

Fig 3: The reverse view of Trichophyton violaceum slope

![Image of the reverse view of Trichophyton violaceum slope.]

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ea capitis cases.\textsuperscript{(20)} Thus, tinea capitis should be suspected in any localized lesion of the scalp with fine white scales.

Direct microscopic examination was negative in 9 cases, 5 of them (55.6\%) had positive culture results. This percent of negative microscopic examination supports the suggestion that arthrospores and hyphae are sometimes difficult to find in KOH smears in the inflammatory infections.\textsuperscript{(21)} This reflects the importance of cultural methods in diagnosis of dermatophyte infection even if KOH preparation is negative.\textsuperscript{(22)}

The isolated species were found to be T. violaceum (77.8\%), M. canis (14.8\%) and T. mentagrophytes (7.4\%). In a previous study done in Mansoura on 97 cases of tinea capitis, 1 to 15 years old, the isolated dermatophytes were T. violaceum (38.1\%), M. canis (25.8\%), T. tonsurans and M. gypseum (4\% for each).\textsuperscript{(23)} In a study done in Diyarbakir, Turkey, the most frequently isolated agents were as follows: T. violaceum (43.6\%), M. canis (37.9\%), T. mentagrophytes (8.1\%) and T. verrucosum (4.8\%).\textsuperscript{(24)}

Seborrhoeic dermatitis was the second frequent diagnosis (24\%) after T. capitis, and all these cases present before the 2\textsuperscript{nd} age of life, and represent 66.7\% of cases at this age group. Many reports noted that the most common diagnosis of scalp scaling before 2 years old, was seborrhoeic dermatitis.\textsuperscript{(18,25)} One of these reports found cases of seborrhoeic dermatitis in the 2-6 years age group, presenting by infantile type (cradle cap) or pubertal type (dandruff) but in a prevalence less than that of infantile group (6\% vs. 18\%).\textsuperscript{(18)} So, seborrhoeic dermatitis should be the first disease to be considered in scaly scalp patients in the first two years of life.

The most common form of seborrhoeic dermatitis was the localized form (83.3\%) and most of the scales were in the form of yellowish scales (58.3\%). So presence of localized yellowish scales of the scalp in the first two years of life is highly suggestive of seborrhoeic dermatitis.

Psoriasis comes in the third order

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4. Pakula AS and Paller AS (1993) : 

The frequency of common skin conditions in preschool-aged children in Australia: Seborrheic dermatitis and pityriasis capitis (Cradle cap). Archives Dermatol; 139: 318-22.


8. Manglani PR, Ramanan C and Durairaj P (1988) : 


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مرحلة الرضاعة فقط. وكان الفحص المجهرى ايجابيا في 71% و الزرع الفطري ايجابيا في 87.8% من حالات سعفة الرأس. وكان أكثر فصيل فطري تم اكتشافه هو الترايكوفيتون فيوليشيم.

الخلاصة: ان أكثر أسباب تحريف فروة الرأس في الرضع هو الإكزيما الزهاوية تليها سعفة الرأس والتي تعد السبب الرئيسي في مرحلة 2-6 سنوات. ويعد الزرع الفطري وسيلة هامة جدا لتشخيص الأمراض الفطرية حتى و ان كان الفحص المجهرى سلبيا.