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## RESEARCH ARTICLE

# INCIDENCE OF LOCAL CANDIDA ALBICANS INFECTION AMONG INFANTS HAVING INFANTILE SEBORRHOEIC DERMATITIS

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### ABSTRACT

Infantile Seborrhoeic Dermatitis (ISD) is a skin disorder in infants usually started before the age of three months. It is characterized by inflammation and desquamation in areas with a rich supply of sebaceous glands. The favorable response to antifungal therapy in Seborrhoeic Dermatitis may indicate a role for fungal infections in these conditions. This study aimed to identify the interrelation between ISD and Candida-albicans infection infants attending Dermatology clinic in Mosul city, who had a clinical picture of ISD were included in this study. Healthy infants with similar age and sex were concurrent controls. The study population was divided into two groups:

1. **Group I:** 135 infants presented with ISD.
2. **Group II:** 150 healthy infants.

In all patients and controls, Samples were taken with a curette from the forehead and the temporal area. Direct KOH was +ve in 51% of Group I while only in 4% of Group II. Cultures for Candida-albicans were +ve 33% of Group I, and 5.33% of Group II. It is concluded that the presence of high percentage of invasion by Candida-albicans in this study may indicate either a significant role for these microorganisms in the pathogenesis of the lesions of ISD, or it may indicate a superadded infection (due to presence of high amount of lipid secretion in these patients compared to controls).

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## INTRODUCTION

Infantile Seborrhoeic Dermatitis (ISD) is a superficial inflammatory disease. It is a common form of eczema characterized by inflammation and desquamation in areas with a rich supply of sebaceous glands (Andrews, 2000). It tends to occur in infants with greasy skin and on the areas with maximum sebaceous activity, e.g. the scalp, face, retroauricular areas and napkin area (Blum and Yaw 1989, Braun-Falco *et al.*, 1986). ISD considered by some to be adistinct entity, while other thinks that it is a clinical variant of atopic dermatitis (Podmore *et al.*, 1986). ISD is a yellowish, greasy, Scaly and crusty skin rash, usually not itchy (Better Health Channel, 2006). Seborrhoeic Dermatitis is seen more during infancy because the sebaceous glands are active at birth due to maternal androgen secretion. ISD usually starts before the age of three months and it may resolve within few months and responds rapidly to treatment (Blum and Yaw, 1989). The controversy concerning the relationship between atopic dermatitis and Seborrhoeic Dermatitis in infancy is certainly partly the result of misdiagnosis.

Although ISD affects areas with many sebaceous glands; however, recent evidence indicates that hyper secretion of sebum was not present in a group of affected patients when compared with a control group. So, the etiology of ISD is not clear and many factors such as genetic, fungal, or immunological disturbances may play a role (Dobre and Zissova 1997). In a certain study an evidence for a slight T-cell defect was seen in many patients with Seborrhoeic Dermatitis (Faergemann, 1993). The response of Seborrhoeic Dermatitis to antifungal therapy (e.g. itraconazole, miconazole and ketoconazole) may indicate a role for these microorganisms in the pathogenesis of these conditions (Reichrath, 2004). Seebacher suggested an allergic reaction to Candida-albicans antigen in the pathomechanism of ISD (Seebacher, 1981). Many antimycotics have been found to be effective in the treatment of seborrhoeic dermatitis (Reichrath 2004; Ford *et al.*, 1984). Nutritionally oriented practitioners have speculated that the disorder is caused by the baby immature digestive system being unable to absorb sufficient biotin and other vitamins of the B-complex (Better Health Channel, 2006). The aim of this study is to identify the interrelation between ISD and candida-albicans, and the role of topical antifungals in the management of ISD.

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## PATIENTS AND METHODS

The study included infants attending Dermatology clinic in Mosul city who had a clinical picture of ISD. Healthy infants with similar age and sex were concurrent controls. The study population was divided in to two groups:

**Group I:** 135 infants presented with ISD (78 males and 57 females).

**Group II:** Comprising 150 healthy infants (75 males and 75 females).

The exclusion criteria for patients were; topical treatment in previous week, steroid therapy, the presence of any other skin disease and the involved infants should not use any soap for 24 hours before samples taken. In all patients and controls, samples were taken with a curette from the forehead and the temporal area. The following investigations were conducted:

1. Direct microscopy for fungi by 15% KOH method.
2. Quantitative culture for candida-albicans using sabourauds agar media and incubated at 37°C for about one week. All specimens were cultured regardless the result of direct microscopical examination.
3. Skin prick test with candida antigen (for infants older than 4 months of age). The chi-square test with Yates correction were used to compare the results in both groups and to assess their significance.

## RESULTS

The study revealed that there was a very high significant difference in direct microscopical examination for fungi by 15% KOH method between cases and controls. The direct 15% KOH was +ve in 69 cases (51%) in Group I (patients) and 6 cases (4%) in Group II (controls) (Table 1).

**Table 1. Differences in direct microscopical examination for fungi by 15% KOH method between cases and controls**

Direct 15% KOH Examination	Positive +ve		Negative - ve		Total	
	No.	%	No.	%	No.	%
Group I (patients)	69	51	66	49	135	100
Group II (controls)	6	4	144	96	150	100

The difference between Group I and Group II about +ve KOH is statistically very highly significant.  
 $\chi^2=81.327(P=0.000)$

The quantitative cultures for candida-albicans showed a very highly significant difference between the study groups, they were +ve in 45 cases (33.3%) in Group I and 8 cases (5.33%) of Group II (Table 2).

**Table 2. Differences in quantitative culture for Candida-albicans method in cases and controls**

Culture for Candida-albicans	Positive +ve		Negative - ve		Total	
	No.	%	No.	%	No.	%
Group I (patients)	45	33.3	90	76.7	135	100
Group II (controls)	8	5.33	142	95.67	150	100

The difference between Group I and Group II about +ve Candida-albicans culture is statistically very highly significant.  
 $\chi^2=36.798(P=0.000)$ .

Other fungi which could isolate in Group I are Alternaria in 2 Cases. Aspergillus in 3 cases and Trichophyton in 2 cases.

While others rather than Candida-albicans in Group II was only Trichophytonin one cases only. Skin prick test with Candida antigen (done only for infants older than four months) was +ve in 12 cases (8.88%) in Group I (and these positive results were seen in older infants). While it is -ve in Group II (0%).

## DISCUSSION

Seborrhoeic dermatitis can affect patients from infancy to old age (Faergemann, 1993). ISD is a skin disorder in infants. The highest prevalence occurred in the first three months of life. Decreasing rapidly by one year of age (Reichrath, 2004). In this study, the scalp was involved in all cases of Group I. ISD does not affect the hair growth. In this study seborrhoeic dermatitis did not affect the hair growth in infants in spite of high percentage of hair involvement with greasy yellowish crusts in infants of Group I. The lesions were more or less bilateral symmetrical in the involved infants. The general health of the infant was unaffected by the disease even when it is widespread. ISD may be a distinct entity or a variant of atopic dermatitis (Podmore *et al.*, 1986). The etiology of ISD is unclear but Candida-albicans and pityrosporum ovale have been mentioned as an important factors (Podmore *et al.*, 1986). The association between seborrhoeic dermatitis and pityrosporum ovale has been studied by many authors but the results were equivocal (Podmore *et al.*, 1986). The argument that yeast is the cause of seborrhoeic dermatitis is a persuasive one. Malassezia fungi have been found the suspected cause of seborrhoeic dermatitis (Reichrath, 2004). Candida-albicans has been mentioned as an important factor in the etiology of ISD (Seebacher, 1981). In this study we could isolate Candida-albicans in 33.3% of Group I, while only in 5.33% of Group II, and the difference was statistically very highly significant. It could be stated that lipid concentration in the skin may enhance invasion by these microorganisms (Braun-Falco *et al.*, 1986). The seborrhoeic state is often associated with increased susceptibility to pyogenic infections, but there is no evidence that these microorganisms are responsible for seborrhoeic dermatitis (Ford *et al.*, 1984). It cannot be stated whether these microorganisms are pathogenic or merely saprophytic invader, because no relation between their presence and the severity of the clinical state could be established. Although their prevalence is higher in the patients Group than in the control Group, But this may be to the presence of dandruff and increase lipid production in the skin of these patients. The lipid content of the skin of seborrhoeic dermatitis patients are higher than normal individuals (Dobrev and Zissova 1997). And this increased sebum content favors the growth of yeasts (Seebacher, 1981). This study has emphasized the need for better hygiene and repeated washing as an important step in the management of this disease to gather with the need of local antifungal agents as there was high percentage of Candida-albicans isolation from the lesions of infants having ISD whom involved in this study.

## Conclusion

The presence of high percentage of invasion by Candida-albicans in this study may indicate either a significant role for these microorganisms in the pathogenesis of the lesions of ISD, Or it may indicate a superadded infection (due to the presence of high amount of lipid secretion in these patients compared to controls). The mode of action of antifungal agents on seborrhoeic dermatitis remains un-established and more

elaborated studies about the effect of different treatment regimens are required paying attention for their safety in infants.

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