Superficial Fungal Infection of the Skin in Patients with Rheumatoid Arthritis after Methotrexate Therapy

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ABSTRACT:

BACKGROUND:

Fungal infection of the skin is common disorder characterized by recurrent candidal skin infection, tinea cruris ,tinea (pityriasis) versicolor and candidal infection of the nails in patients suffered of rheumatoid arthritis (R.A.) and treated by methotrexate.

AIM OF THE STUDY:

To discover the fungal skin complications after usage of methotrexate in the treatment of patients with Rheumatoid arthritis.

METHOD:

Thirty two patients with R.A. were enrolled in the study who received 7.5 mg methotrexate and daily 100mg diclofenac for six months in comparison to 32 patients with R.A. who received only daily100 mg diclofenac as treatment.

RESULTS:

Ten patients (31.2%) developed fungal infection of the skin and nails, 5 [16%] patients with tinea versicolor of the body, 3 [9%] patients with tinea cruris and [6%] two patients had paronychia .
The control group did not develop any skin or nails fungal disorders.

CONCLUSION:

Superficial fungal infection was a common problem among RA patients treated with methorexate.

KEY WORDS:Superficial fungal – rheumatoid arthritis and methotrexate

INTRODUCTION:

Superficial fungal infection of the skin is some of the most common dermatological conditions seen in the clinical practice, coming third in incidence after pyogenic and eczematous dermatoses. Superficial fungal infection can be divided into three broad categories: dermatophytic infection,tinea versicolor,and cutaneous candidiasis .Despite its large surface area and its constant exposure to the environment, the skin is relatively resistant to fungal infection [(1)].

Superficial fungal infections are mostly caused by dermatophytes which include the fungi in genera "Trichophyton,Microsporum and Epidermophyton" ([2-3-4-5]),in addition to great variety of yeasts, molds and other fungi ,altogether are grouped under the name "dermatomycosis".it was found that dermatomycosis was affecting males more than females [(3)] and genus trichophyton is responsible for the main cases of dermatophytosis [(6)].

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Dermatophytosis is the infection of keratinized tissue such as hair, nails and the stratum corneum of the skin. Dermatophytic fungi have a unique interaction with the immune system [(7)].Dermatophytes infections occur more frequently in people with impaired cell mediated immunity. In immunosupressed patients the superficial fungi can cause considerable morbidity and mortality.

The various forms of dermatophytosis also called Ringworm , are named according to the site involved .these infections include tinea capitis is the predominating fungal disaese mainly in male children [(2-3-8-9-10)] ,tinea coporis ,tinea barbae ,tinea faciei ,tinea cruris ,tinea pedis , tinea unguium and tinea manuum [(11)] .

Tinea versicolor is common, primarily in young and middle-aged adults; females were infected twice as frequently as males [(2)].tinea versicolor is also referred to as pityriasis versicolor [(12-13)]

Paronychia of the finger nail, that might be secondary invaded by candida Spp. develop in person whose

hands are subject to continuous wetting with sugar solutions or contact with flour,Gumer and Guirges in 1978 (2) found nails to be a common site of candidal infection.

The lesions tinea versicolor demonstrates pseudohyphae and yeasts which resemble spaghetti and meatballs by using KOH preparation of the scrapings [14-15]. Culture of the yeast requires special media such as Sabouraud's dextrose agar .growth typically occurs in 3 to 5 days [16].

Rheumatoid arthritis is a common chronic in inflammation arthritis and affects about 1% of adults .It is two to three times more prevalent in women than in men. Diagnosis of Rheumatoid arthritis depends on a constellation of signs and symptoms that can be supported by serology and radiographs.

Methotrexate is one of the most effective second line drugs [17]. It alleviates the sign and symptoms of R.A. and slows the rate of bone erosion.Methorexate is a folic acid antagonist [18].The primary action of methotrexate is anti-inflammatory although immunosuppresion plays an important role. methotrexate is given in weekly oral doses beginning at 7.5 mg and if necessary increasing to 15 mg over 2 to 3 months [19-20].

PATIENTS AND METHODS:

Sixty-four patients who met the American College of Rheumatology 1987 criteria for rheumatoid arthritis had the disease without prior use of systemic steroids, were investigated during the period between January - July 2007 in the Department of Rheumatology at AlKadhimiya Teaching Hospital.

Exclusive criteria

Patients suffering from any other skin lesions had been excluded from the study. Also patients who used steroid or chemotherapy were not included.

The participating patients divided into two equal groups each group composed of 32 patients .The first group was given methotrexate 7.5 mg weekly and 50 mg diclofenac two times daily. While the second group patients received only diclofenac 50 mg two times daily.

The second group was proportionally matched for age and sex to first group.

All data were analyzed by excel programme using the independent t-test considering ($p< 0.05$) as significant difference.

Clinical material

In patients with suspected dermatophytosis and candidiasis of skin and nail scrapings were selected and taken. While only skin scrapings from patients with tinea versicolor were taken.

While for dermatophytosis, using blunt scalpel firmly scraped the lesion. The specimen was chosen from active infection site, and this might be scale, crust or vesicles particularly at the advancing borders. Skin was decontaminated before scraping with 70% alcohol to remove surface bacterial contamination.

The nail sample taken from the deeper part of the discolored or dystrophic part of the nail, specimens were taken from the nail plate, bed and nail folds (21).

Microscopical Examination

Skin and nail scrapings from patients with dermatophyte, candida or tinea versicolor were examined microscopically using 10% KOH and Parker Ink (potassium hydroxide [10g], glycerol [10 ml], parker quick permanent blue ink [10 ml], distilled water [80ml].

KOH mount might take from 20 minutes for skin scrapings to several hours for nail scraping.

KOH mount of infected skin scales showing faintly blue stained typical dermatophyte hyphae and /or arthroconidia .Negative specimen was kept and re-examined the next day to avoid reporting false negative result.

Candidal nail scrapings examined by KOH for the demonstration of pseudohyphae in scraping was considered significant while the finding of just budding yeast cell in such materials was little diagnostic importance.

Although the diagnosis of tinea versicolor was made by clinical presentation, it was confirmed by KOH

Skin scrapings taken from patients with tinea versicolor stained rapidly with 10% KOH, glycerol and parker ink to identify fungal elements.

Culture

Clinical specimens like nail and skin scrapings were processed for the isolation of candida and dermatophytes according to standard procedures [22].

All cultures were made on Sabouraud's dextrose agar (Sabouraud's dextrose agar [23]

[65g],chloramphenicol [1 X 250 mg capsule] ,garamycin 40mg/ml [0.65ml]) in 1 liter of distilled water and incubated at 35-37 C for up to 4 weeks for any significant dermatophyte and candida species .

The candidal isolates were tested for germ tube formation, the germ tube position isolates were identified as Candida albicans [23].

RESULTS:

The first group who received methotrexate and diclofenac composed of 29 females and 3 males with a mean age of 49.2 +- 8.4 years while the second group who used diclofenac composed of 30 females and 2 males with a mean age of 48.6 +- 9.2 years.

All patients in both groups completed the study period. The participating patients who used methotrexate therapy ten (31.2%) of them developed fungal skin infection.

Five patients (16%) developed tinea versicolor, while three patients (9%) had tinea cruris. Two patients (6%) presented with paronychia

Statistical analysis showed that [p value < 0.005] in comparison with the second group.

The tinea versicolor and the tinea cruris developed after two months from the commencement of therapy while candidal paronychia appeared after three months from the time of beginning of treatment.

DISCUSSION:

Superficial fungal skin infection is common problem among Iraqi population like tinea capitis ,tinea corporis and tinea versicolor,while chronic paronychia is major problem among housewife[3-4-5-6-24-25-26].

Using immunosuppressive therapy like methorexate might depress the immunity and increase the frequency of these fungal infections as shown by present study. as 31.2% of RA patients on methotrexate developed superficial fungal infections ;among these patients ,tinea versicolor was the first most common fungal infection while tinea cruris was the second common fungal infection presented in our patients treated with methotrexate and only in some cases paronychia was seen associated .

In this study, tinea versicolor and tinea cruris developed earlier in patients treated with methorexate than paronychyia after commencement of treatment

CONCLUSION:

Multiple and widespread fungal infection of the skin and nails can be observed in patients with R.A. who had been treated with methotrexate as observed in 31.2% of RA patients treated at methotrexate.

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