

Frequency of superficial fungal infections in renal transplant recipients

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Abstract *Objectives* To determine the frequency of superficial fungal infections in renal transplant recipients.

Methods This cross-sectional study was conducted in the outpatient clinic, Department of Dermatology, Dow University of Health Sciences & Civil Hospital Karachi. Patients of 20-60 year of age undergone renal transplant 3 to 12 months back were enrolled while patients with diabetes were excluded from study. Patients were evaluated for the presence of superficial mycoses. Skin scrapings and nail clippings were collected mycologic evaluation.

Results A total of 62 patients were enrolled. The mean age of enrolled patients was 39.9±10.3 years and 37 (59.7%) were male. The mean duration of transplant was 7.6±2.9 months. 23 (37.1%) were on steroids. Fungal infections were documented in 38 (61.3%) patients. Of 38 patients, 19 (50%) had candidiasis. Stratified analysis showed fungal infections to be similar in ≥40 or <40 years of age (63.6% v. 58.6%), female and male (64% vs. 59.5%); duration of transplant <8 or >8 months (63.9% vs. 57.7%) and those who were on steroids (69.6%) or other drugs (62.5%).

Conclusion It is concluded from this study that patient's undergone renal transplant has increased frequency of fungal infection.

Key words

Fungal infection, renal transplant, candidiasis, dermatophytoses.

Introduction

Fungal infections of the skin are divided into superficial and deep fungal infections. Superficial fungal infections of the skin can be caused by dermatophytes, yeasts and nondermatophytes.¹ Some of the fungi are present on skin as normal commensal of skin, but these may divide and become lethal if patient is immunocompromised.² Extensive knowledge of these infections is required for the diagnosis and treatment of these infections.³

Renal transplant recipients are predisposed to superficial fungal infections caused by graft-preserving immunosuppressive therapy. The frequency of fungal infection in recipient of

kidney varies from 7-75%.⁴⁻⁶ All collected data show wide difference in prevalence rates.⁷ The prevalence of opportunistic infections like pityriasis versicolor and candidiasis is increased among kidney transplant recipients. Dermatophytosis is less commonly seen in these patients.^{8,9} In their study reported that 63.7% of the renal transplant recipients had fungal infection i.e. cutaneous-oral candidiasis, dermatophytosis, or pityriasis versicolor. Tinea versicolor was the most common fungal infection (36.3%), followed by cutaneous-oral candidiasis (25.5%), onychomycosis (12.7%), and fungal toe-web infection (11.8%). *Candida albicans* was the main agent responsible for oral candidiasis (20.6%), and *Trichophyton rubrum* (1.9%) was the most common dermatophyte isolated.

The objective of this study is to determine the frequency of superficial fungal infections in renal transplant recipients.

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Methods

The cross-sectional study was performed at the outpatient clinic, Department of Dermatology, Dow University of Health Sciences & Civil Hospital Karachi, from 2nd August 2011 to 1st February 2012

Taking confidence level (1- α) of 95%, anticipated population proportion (P) of 63.7% and absolute precision (d) of 12% the sample size is calculated as 62. Sample technique used was non-probability purposive. Following patients were included: age 20-60 years, either gender, renal transplantation within 3-12 months. Patients were excluded from the study who had any other cause of immunosuppression e.g. diabetes mellitus.

This study was conducted after the approval from College of Physicians and Surgeons Pakistan and Hospital Ethical Review Committee. Informed consent was taken from all the patients. All affected patients were examined under Wood's lamp. Skin scrapings were also taken and KOH mount was done. Culture was done only if needed. Data i.e. age, gender, duration post-transplantation, type of immunosuppressant therapy and fungal infection were recorded on preapproved proforma.

The data were analyzed on SPSS version 17.0. The frequency and percentage was calculated for qualitative variable like gender, type of immunosuppressant therapy and fungal infection. Mean \pm SD was computed for quantitative variables like age, duration of post renal transplantation. Stratification was done with regards to age, gender and duration of post renal transplantation and type of immunosuppression to see the effect of these on outcome.

Results

A total of 62 patients who had undergone renal

Table 1 Duration of renal transplant and types of immunosuppressant therapy in enrolled participants (n=62).

	N (%)
<i>Duration of transplant</i>	
<8 months	36 (58.1)
>8 months	26 (41.9)
<i>Type of immunosuppressant therapy</i>	
Steroids	23 (37.1)
Cyclosporine	21 (33.9)
Azathioprine	18 (29)

Table 2 Type of fungal infections in enrolled participants (n=38).

Type of fungal infection	N (%)
Candidiasis	19 (50)
Dermatophytosis	11 (28.9)
Pityriasis versicolor	8 (21.1)

transplants were enrolled in this study. Of 62 patients 33 (53.2%) were \geq 40 years of age with mean age of 39.9 \pm 10.3 years and 37 (59.7%) were male with male to female ratio of 1.5:1. Of 62 patients, 36 (58.1%) had duration of renal transplant of less than eight months with mean duration of 7.6 \pm 2.9 months (**Table 1**). 23 (37.1%) patients were on steroids followed by cyclosporine 21 (33.9%) and azathioprine 18 (29%), (**Table 1**).

Superficial fungal infections were seen in 38 (61.3%) patients. Of 38 fungal infections 19 (50%) had candidiasis, 11 (28.9%) had dermatophytoses and 8 (21.1%) had pityriasis versicolor (**Table 2**). Stratified analysis based on age, sex, type of immunosuppressant and duration of renal transplant showed that frequency of fungal infections was similar in patients \geq 40 years of age (63.6%) compared to <40 years (58.6%), ($p=0.44$); female (64%) and male (59.5%) patients, ($p=0.46$); those who had duration of transplant <8 months (63.9%) and those who had duration of transplant >8 months (57.7%), ($p=0.41$); and those who were on steroids (69.6%) as compared to other immunosuppressant (62.8%), ($p=0.54$).

Discussion

Cutaneous fungal infections are seen more

frequently in patients on dialysis and also in renal transplant recipients. These transplant patients are on immunosuppressive therapy.¹⁰ Due to this immunosuppressive therapy, they are more prone to infections as well as malignancies.¹¹ Cutaneous fungal infections are frequently implicated in these patients. The aim of this study was to determine frequency and types of superficial fungal skin lesions in renal transplant patients. We found that 38 (61.3%) patients with renal transplantation had cutaneous fungal infections. Of 38 fungal infections 19 (50%) had candidiasis, 11 (28.9%) had dermatophytoses and 8 (21.1%) had spores. Similar frequency of fungal infections was reported by a study in Tamil Nadu. They reported frequency of fungal infection in renal transplant patient was 58.7%.¹² Similar to this study, other studies reported prevalence of fungal infections ranging from 60% to 75%. In this study fungal infections were more common among those who received immunosuppressant less than 8 months accounting for 23 (63.9%) cases. Unlike this finding Indian study reported higher proportion of fungal infections in those with longer transplant duration.¹³ In this study fungal infection is more common in patient receiving steroids accounting for 16 (69.6%) cases followed by azathioprine. Similar to this study, Correie *et al.*¹² reported 63.4% cases of fungal infection who were on steroid. The strength of this study is that it is well conducted and diagnosis is based on investigations. There are some limitations to this study. We have included only candidiasis, dermatophytoses and spores; however there are other fungal infections. Another limitation, is that a hospital-based data is not representative of population.

Conclusion

It was concluded from this study that transplant recipient patients have higher proportion of superficial fungal infections. Therefore, a careful and regular examination

of kidney recipients by a dermatologist is mandatory.

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