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FREQUENCY OF PULMONARY TUBERCULOSIS IN PATIENTS WITH CUTANEOUS DISEASES TAKING ORAL STEROID THERAPY

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ABSTRACT… Objectives: to investigate the frequency of pulmonary tuberculosis in patients of cutaneous diseases requiring high dose steroids therapy. **Study Design:** Cross sectional study Place and duration: Dermatology department of Nishtar Hospital Multan in one year duration from 2nd March 2018 to 2nd March 2019. **Methodology:** Sixty patients currently diagnosed with skin manifestations and taking high dose steroids were screened for pulmonary tuberculosis. Patients were screened at 6 weeks, 3 months and 6 months. Chest radiograph, sputum smear for acid fast bacilli and sputum culture were performed at every visit. SPSS version 23 was used for analysis of data and test of significance. **Results:** Sputum smear at 6 weeks, 3 months and 6 months was observed as 1.6%, 3.3% and 6.6%, respectively. Sputum culture at 6 weeks, 3 months and 6 months was observed as 11.6%, 13.3% and 10%, respectively. X-Ray at 6 weeks, 3 months and 6 months was observed as 1.6%, 0% and 0%, respectively. **Conclusion:** Patients with cutaneous diseases taking systemic steroids should screen for pulmonary diseases at intervals because they can develop pulmonary tuberculosis.

Keywords: Cutaneous diseases, systemic steroids, pulmonary tuberculosis, Mycobacterium, sputum smear.

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INTRODUCTION

Tuberculosis is a serious infection caused by mycobacterium tuberculosis is an acid fast bacillus1. If it is left untreated it will be chronic and may affect different systems of the body including gastrointestinal tract, skin, genitourinary system, lungs, joints, bones, central nervous system and lymphoreticular system2. According to a survey an active tuberculosis patient infects about 15 persons per annum. It is not necessary that a person carrying tubercle bacilli present with sign & symptoms of tuberculosis because immune system in the causative organisms keep it dormant for a long time.

In patients with compromised immune system there are greater chances of tuberculosis to become active4. Currently with every second in new person is infected with mycobacterium tuberculosis. An about one third of the worldwide population is infected with tubercle bacilli. In immuno competent worldwide population five to ten percent of peoples suffer from tuberculosis in their life5. Prevelance of tuberculosis in Pakistani population was 355 per one lac peoples in era of 2009[6].

In immunocompromised people's e.g. HIV active persons or those people who are taking immunosuppressive drugs there are greater chances of acquiring tuberculosis7. In these persons tuberculosis may arise from primary infection by re infection or re activation. In patients with cutaneous diseases who were taking glucocorticoids there are greater chances of tuberculosis infection because glucocorticoids are the immuno suppressive drugs for collagen vascular diseases and immunobullous diseases. Administration of high dose glucocorticoids for long time often needed to control the skin diseases like pemphigus valgarus, Lupus erythematous and bullous pemphigoid9. These patients are more risky for acquisition of primary TB and re infection. This process of immuno suppression masks the sign & symptoms of tuberculosis which leads to a delay in diagnosis and proper treatment10.

METHODOLOGY

After permission from the hospital ethical board study was completed in dermatology department of nishtar hospital Multan in one year duration from 2nd March 2018 to 2nd March 2019. Patients were included in the study after obtaining a detailed concent. Non probability consecutive sampling was used. Adult patients of age more than 12 years and who is taking oral steroids therapy for the skin problems were included in the study. Patients already on antituberculosis therapy, any other immuno suppressive drugs, systemic steroid therapy and uncontrolled diabetes were excluded from the study. Complete history was taken and clinical examination was done on all patients. Necessary screening investigation was also taken on their very first visit. Follow up was done at 6 weeks, 3 months and 6 months to evaluate the pulmonary TB. Sputum smear for acid fast bacilli (AFB) was done on every visit for three consecutive days. If two or more sputum smear for AFB were Positive no further investigation were performed.

If out of three consecutive sputum smears only one was positive then chest x-ray was taken for diagnosis of any abnormality associated with active pulmonary tuberculosis. If abnormality was diagnosed no further tests performed. In cases of one sputum spear was positive and x- ray chest was normal then sputum culture was carried out. If sputum culture was positive patient was labelled as active case of pulmonary TB.

If sputum smear for AFB for consecutive three days was negative then sputum culture was performed. In cases of one or more sputum culture were positive patients were labelled as active case of pulmonary TB. If sputum smeqror AFB was negative for consecutive three days along with negative sputum culture but radiographic abnormalities identical to active tuberculosis were persistent and not imroved with broad spectrum antibiotics for one week at least such cases also labelled as active pulmonary tuberculosis. A pre designed performance was used to note down history, physical examination and results of the screening tests and radiographic findings. SPSS version 23 was used for the analysis of the study data. Mean and standard deviation were calcuted for numerical variables and frequency percentages calculated for qualitative data. Tests of significance (t test and chi square test) were applied to check the association among variables. P value less than or equal to 0.05 was taken as significant.

RESULTS

Sixty patients were enrolled in this study, both genders. Gender distribution showed as n=33 (55%) males and n=27 (45%) females. The mean age of the patients was 43.78±3.76 years. Pemphigus vulgaris, systemic lupus erythematosus, pemphigus foliaceus, bullous pemphigoid and lupus erythematosus/lichen planus was observed as n=49 (81.7%), n=6 (10%), n=7 (11.7%), n=7 (11.7%) and n=3 (5%), respectively. (Table. I).

Sputum smear at 6 weeks, 3 months and 6 months was observed as n=1 (1.6%), n=2 (3.3%) and n=4 (6.6%), respectively. Sputum culture at 6 weeks, 3 months and 6 months was observed as n=7 (11.6%), n=8 (13.3%) and n=6 (10%), respectively. X-Ray at 6 weeks, 3 months and 6 months was observed as n=1 (1.6%), n=0 (0%) and n=0 (0%), respectively. The difference was statistically significant, (p=0.000). (Figure-I).

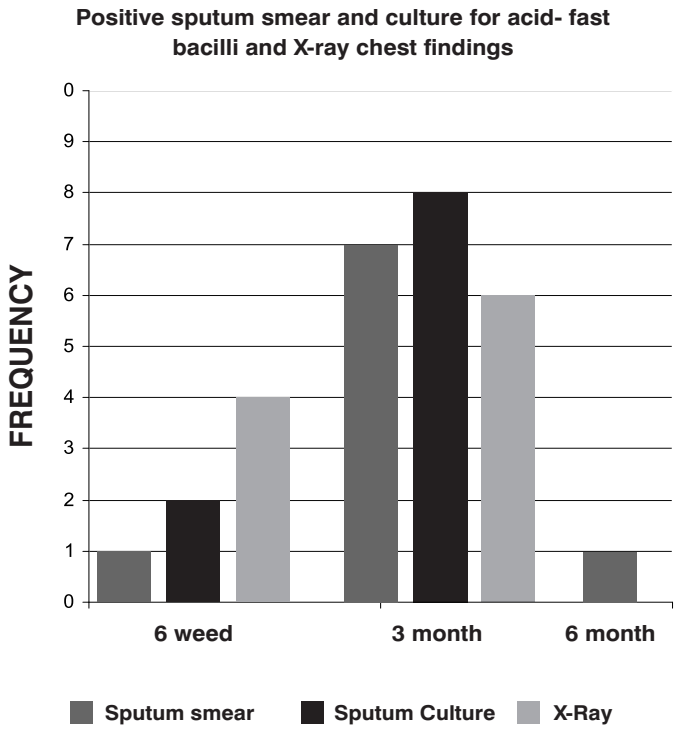
Table-I

DEMOGRAPHIC VARIABLES

Variable	n , (%)
Age (years)	43.78±3.76
Gender	
Male	n=33 (55%)
Female	n=27 (45%)
Pemphigus vulgaris	n=49 (81.7%)
Systemic lupus erythematosus	n=6 (10%)
Pemphigus foliaceus	n=7 (11.7%)
Bullous pemphigoid	n=7 (11.7%)
Lupus erythematosus/lichen planus	n=3 (5%)

FIGURE. I

FREQUENCY OF TUBERCULOSIS INFECTION



DISCUSSION

Limited research is available before on incidence of tuberculosis due to oral steroid therapy of pemphigus valgarus and other cutaneous diseases. It is a known side effect of steroids that aggravation of infection may occur when administered for long time11. In cases of tuberculosis an increase in infection or reactivation was observed. Pal D et al12 conducted a study in 2002 and reported that use of steroids has negligible effect on incidence of tuberculosis.

Another study was conducted by Kim et al[13] and reported that a significance increase in incidence of TB was observed in patients of rheumatoid arthritis who are taking corticosteroids for a long time. During the first year of steroid therapy use of high dose, cumulative and daily administrations are the main risk factors. Our study is also based on similar variables e.g. high dose and routine use of steroids.

In another study Sasaki et al14 also reported similar findings that long term use of steroid therapy is a factor of TB infection because of immunosuppressive effect of corticosteroids. He conducted that study on patients of collagen vascular disease who were taking dose of 13.9 to 20 mg and using approximately from 4 years.

Kobashi et al15 also conducted a study on this topic and reported 3.1% patients diagnosed with pulmonary TB who were taking corticosteroids from 2 months. Total calculated amount of steroids in two months was 1.16 mg to 5.6 mg. These two studies are also supportive to our study findings.

Dryga et al16 conducted a study in 1995 on this topic and reported non negligible incidence of tuberculosis in patients of steroid therapy. Patients of glucocorticoids with different doses are prone to develop pulmonary tuberculosis. Jick et al17 reported a different conclusion from his study that patients using glucocorticoids for any purpose are at greater risk of developing pulmonary TB without depending on any other risk factor. Main factor reported was again same immunosuppressive effect of steroids which allow the infective diseases to activate or incubate.

Chan and Yosipovitch et al18 conducted a study and carried out a screening of patients who were taking glucocorticoids and reported that lower doses along with intermittent administration are not associated with pulmonary tuberculosis infection. In our study we didn't included variable of lower dose observation. Results of this study and previous studies given proved that only high doses associated with tuberculosis infection and reactivation.

Sayarlioglu et al19 and Butt G et al1 also reported in their studies that use of use of long term and high dose of steroids associated with tuberculosis infection. In our study we also observed a statistically significant association among steroids and tuberculosis infection.

CONCLUSION

Patients with cutaneous diseases taking systemic steroids should screen for pulmonary diseases at intervals because they can develop pulmonary tuberculosis.

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