

RETROSPECTIVE ANALYSIS OF PRESCRIPTIONS IN THE MANAGEMENT OF LEPRA REACTIONS: RESULTS OF A SINGLE-CENTER STUDY FROM TERTIARY HOSPITAL IN MAHARASHTRA

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ABSTRACT

Objective: The objective of this study was to examine the pattern of lepra reactions and medicines used in the treatment of lepra reactions in a tertiary hospital.

Methods: In this retrospective study, prescriptions of patients treated for the lepra reactions were reviewed to find out the prevalence of Type 1 and Type 2 reactions and medicines used in the treatment of lepra reactions.

Results: A total of 66 patients (male 59.1%; female 40.9%) with mean age of 36.6±13.1 years were included in the study. Multibacillary leprosy was present in 93.7% patients. A total of 39 (60%) patients had Type 2 reaction whereas 26 (40%) had Type 1 reaction. Mean number of medicines per patients was 7.5. Prednisolone was used in 62 (93.9%) patients with mean duration of 33.32±33.2 days, whereas chloroquine was used in 52 (78.8%) patients for 36.6±27.9 days. Thalidomide was used in 25 (37.9%) patients. Analgesic and anti-inflammatory and anti-acidity drugs were used in 63 (95.4%) patients each whereas paracetamol was given to 41 (62.1%) patients. Antihistamine, antimicrobial agent, and vitamins were given to 27 (40.9%), 27 (40.9%), and 35 (53.0%) patients, respectively.

Conclusion: Lepra 2 reaction is more common than lepra 1 reaction. Prednisolone and chloroquine are the two most commonly used medicines in the treatment of lepra reaction. Similarly, thalidomide, older drug has emerged as common treatment for lepra reaction.

Keywords: Lepra reaction, Retrospective analysis, Maharashtra.

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INTRODUCTION

Leprosy is a chronic disease caused by *Mycobacterium leprae*, acid-fast bacilli and usually presents with skin and nerve lesions [1,2]. Even today leprosy is an important public health problem. It can result in disfiguring complications in hand, feet, and face including blindness [3]. Early diagnosis, availability of effective drugs and strategies for the prevention of deformities has tremendously helped to effectively manage leprosy and to reduce the incidence of disease [1,4]. However, lepra reaction remains a common problem in patients receiving anti-leprosy therapy. Such reactions can be seen before or after completion of therapy [5]. In a study incidence of lepra reactions was 22.8% in multibacillary patients during multidrug therapy [6]. Two types of lepra reactions (Type 1 and Type 2) are known [7]. Type 1 lepra reactions, i.e., delayed hypersensitivity reactions seen in both paucibacillary and multibacillary cases can cause permanent damage to the peripheral nerves. Type 2 lepra reactions also known as erythema nodosum leprosum are acute inflammatory reactions seen only in multibacillary leprosy (usually in lepromatous leprosy or sometimes in borderline lepromatous leprosy). These reactions are result of immune complex response to *M. leprae* antigenic determinants [8,9]. Lepa reactions pose a significant burden in leprosy patients, hence their early identification and treatment is important to prevent further complications in the form of nerve damage and permanent disabilities [5,10]. There is limited data on the prevalence and management pattern of lepra reactions in real life setting in Indian patients.

Objective

The objective of this study was to find out the pattern of lepra reactions and medicines used in the treatment of lepra reactions in a tertiary hospital.

METHODS

In this retrospective study, we included patients treated for the management of lepra reactions. Prescriptions of the discharged patients were reviewed to examine the prevalence of Type 1 and Type 2 reactions. The mean and total number of medicines used in the patients with lepra reactions was recorded. The study was approved by the Institutional Ethics Committee.

Statistical analysis

Continuous data are presented as mean and standard deviation, whereas categorical data are presented as number and percentages.

RESULTS

In this study, we reviewed data of 66 patients of which 59.1% were male and 40.9% were females. The mean age of patients was 36.6±13.1 years (Table 1).

Out of 63 patients in whom type of leprosy was mentioned, 59 (93.7%) had multibacillary leprosy whereas 4 (6.3%) had paucibacillary leprosy (Fig. 1). In three patients, the classification was not mentioned.

A total of 26 (40%) patients had Type 1 reaction while 39 (60%) patients had Type 2 reaction (Fig. 2). Data of one patient were missing. Of the 39 cases of Type 2 reactions, 11 (28.2%) were steroid-dependent cases and 6 (15.4%) were recurrent erythema nodosum leprosum (ENL).

A total number of medicines prescribed to study patients were 493. The mean number of medicines per patients was 7.5. Drugs used for the treatment of lepra reaction and leprosy are given in Table 2. Table 3 shows adjuvant drugs used in the treatment of lepra reaction.

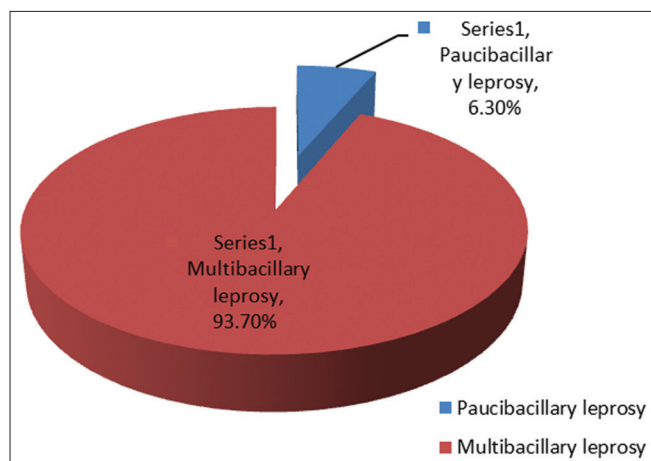


Fig. 1: Type of leprosy (Pauci/multibacillary) (N=63)

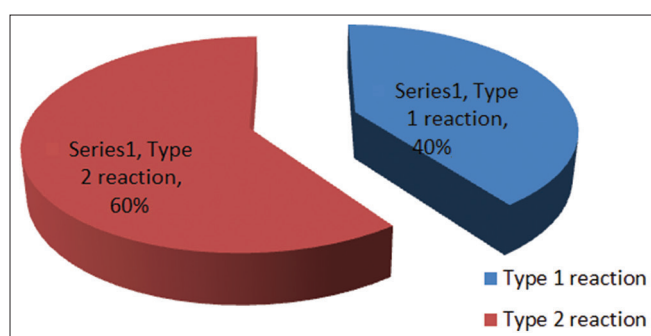


Fig. 2: Prevalence of lepra reactions (N=65)

Prednisolone was used in 62 (93.9%) patients with mean duration of 33.32 ± 33.2 days whereas chloroquine was used in 52 (78.8%) patients for mean period of 36.6 ± 27.9 days. Thalidomide, clofazimine, and colchicine were used in 25 (37.9%), 3 (4.5%), and 1 (1.5%) patients, respectively (Table 2). The mean duration of use for these three drugs was 75.7 ± 41.0 , 24.3 ± 8.1 and 30 days, respectively. Clofazimine was also used in combination with rifampicin and dapsone in 17 (25.8%) patients, whereas combination of rifampicin plus clofazimine was used in 2 patients. This was as a part of multidrug regimen for the treatment of leprosy. Analgesic and anti-inflammatory and anti-acidity drugs were used in 63 (95.4%) patients each. Paracetamol was given to 41 (62.1%) patients.

Antihistamine, antimicrobial agent, and vitamins were given to 27 (40.9%), 27 (40.9%), and 35 (53.0%) patients, respectively (Table 3).

DISCUSSION

Lepra reactions represent a significant burden in patients with leprosy. Systematic data from India on the management of lepra reactions in real life settings are limited. In this study, we examined the prevalence and management pattern of lepra reactions in patients with leprosy. Most of the patients with lepra reactions had multibacillary leprosy in our study. We observed less common occurrence of Type 1 lepra reactions compared to Type 2 reactions. Neuritis, an important cause of deformities in leprosy can be managed in hospitals or outpatient settings, later being more beneficial in terms of cost reduction [11]. Mild cases of Type 1 reaction are treated with analgesics and if there is nerve involvement, addition of corticosteroid is required [8]. Systemic corticosteroids are the important drugs for the treatment of Type 1 reaction [12]. Presentation of Type 2 reactions can be varied ranging from mild disease to severe systematic disease [13] and are difficult to manage [14]. Type 2 reactions are also treated with analgesics and corticosteroids [8]. Thus, overall, the use of analgesics

Table 1: Baseline demographics

Baseline parameter	Result
Total number of patients	66
Mean age (\pm SD) years (range)	36.6 (\pm 13.1) (Range 9-68 years)
Male, N (%)	39 (59.1)
Female, N (%)	27 (40.9)

SD: Standard deviation

Table 2: Drugs used in the management of lepra reactions and leprosy

Class of medicine	N (%)
Prednisolone	62 (93.9)
Chloroquine	52 (78.8)
Thalidomide	25 (37.9)
Clofazimine	3 (4.5)
Colchicine	1 (1.5)
Rifampicin plus clofazimine	2 (3)
Rifampicin, clofazimine plus dapsone	17 (25.8)
Analgesic and anti-inflammatory	63 (95.5)
Paracetamol	41 (62.1)

Table 3: Adjuvant therapies used in the management of lepra reaction

Class of medicine	N (%)
Anti-acidity	63 (95.5)
Antihistamine	29 (43.9)
Antimicrobial	27 (40.9)
Calcium	12 (18.2)
Iron	10 (15.2)
Vitamins	35 (53.0)
Iron plus folic acid	1 (1.5)
Vitamin plus mineral	30 (45.5)
Others	12 (18.2)

and corticosteroids is common in the management of lepra reactions. We observed similar pattern of drug usage in our study. Prednisolone and analgesic-anti-inflammatory agents were used in 94% and 95.5% patients respectively. In addition, paracetamol was used in 41 patients. The exact dose and duration of steroid therapy in the treatment of lepra reactions is not known. is not known [12]. The mean duration of prednisolone use in our study was 33.32 days.

To avoid steroid-related adverse events, steroid sparing agent is required for the management of Type 2 lepra reactions [14]. One of such agents is chloroquine. Apart from malaria, chloroquine can also be used in the management of several other diseases such as extraintestinal amoebiasis, rheumatoid arthritis, and lepra reactions [15]. In our study, chloroquine was the second most commonly used drug after prednisolone. Anti-inflammatory action is the major reason for the use of chloroquine in the management of erythema nodosum leprosum. The other reasons of chloroquine include wide availability, economic advantage, and effectiveness in mild cases of borderline and erythema nodosum leprosum reactions [16]. Our study was performed in a tertiary care government hospital. Free availability of the medicine in hospital pharmacy could be one of the reasons for its common use in our study. In severe cases of type reactions or in patients unresponsive to corticosteroids, agents like clofazimine or thalidomide may be useful [7]. We could not record the severity of reaction, but based on the observations of high use of thalidomide, it can be extrapolated that prevalence of severe reactions was high. Thalidomide, initially used in the management of morning sickness in pregnant women was shown to be associated with severe teratogenic effects in children when consumed by mothers. Later this drug was reintroduced for the treatment of ENL [17]. Thalidomide reduces levels of circulating TNF- α

in patients with ENL [18] and represents a promising agent for the treatment of ENL; however, it is not recommended for use in pregnancy.

Clofazimine has been shown to be effective in the dose of 100 mg 3 times daily for 12 weeks [14]. The benefits of clofazimine include anti-inflammatory and steroid sparing effect [19]. The effective is usually seen after 4 weeks [8]. Clofazimine is used in both, i.e., treatment of leprosy, mainly lepromatous leprosy as well as treatment of lepra reactions, i.e., erythema nodosum leprosum [17,20].

In our study, duration of clofazimine was 24.3 days, mainly in the treatment of leprosy and rarely in the treatment of lepra reaction.

Pentoxifylline is another effective agent for the treatment of Type 2 reactions. Pentoxifylline is effective in reducing initial severity, whereas clofazimine has comparatively slower onset of action [14]. In our study, pentoxifylline was not used. The use of colchicine has also been reported in the management of erythema nodosum leprosum due to its anti-inflammatory and immunoregulatory action [16]. In our study, the use of colchicines was very low. It was used only in one patient in this study. Overall, steroid, analgesic-anti-inflammatory drugs, paracetamol, chloroquine, thalidomide, and clofazimine were the major drugs used in the treatment of lepra reactions. In addition to these major medicines, use of adjuvant therapies including anti-acidity medicines, antihistamines, antimicrobial therapy and vitamins and minerals was common mostly for preventing adverse events and improving general health of the patients.

Our study has some limitations. Cross-sectional, retrospective analysis of data from single center limits the generalization of findings to whole population. The safety of medicines in the treatment of lepra reactions and outcomes of the patients are not evaluated. Considering these findings, the observations should be carefully extrapolated.

CONCLUSION

Lepra 2 reaction is more common than lepra 1 reaction. Prednisolone and chloroquine are the two most commonly used medicines in the treatment of lepra reaction whereas colchicine use is uncommon. Thalidomide, older drug is commonly used for the treatment of lepra reaction in government tertiary hospital set up.

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