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Original Article

Deformity and disability index in patients of leprosy in Larkana region

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Abstract ***Objective*** To find out deformity and disability index in patient of leprosy in Larkana region to provide them regular health education to prevent deformities and disabilities.

***Patients and method*:** This was a descriptive observational study carried out at Leprosy Unit Cum Health Education Cell, Chandka Medical College & Hospital, Larkana, Sindh. Hundred diagnosed cases of leprosy with deformities were included in the study, confirmation of diagnosis was based on positive skin smears (bacillay index).

Results Out of hundred observed cases of leprosy, deformities and disabilities were found in 55 (55%) patients comprising 40 (40%) males and 15 (15%) females of 22 to 75 years of age. The body parts affected in the cases were hands 21%, feet 20% and eyes 14%. The multibacillary (MB) patients had grade II deformities as compared with paucibacillary (PB) patients.

Conclusion The study showed that mostly patients developed deformities and disabilities due to lack of health education, delay in diagnosis and treatment. Rehabilitation, good health and education to patients, their family, friends and community are key to prevention strategy.

Key words
Leprosy, disability and deformity

Introduction

Leprosy is a chronic granulonatous disease caused by *Mycobacterium leprae*, an acid-fast, rod-shaped bacterium. The disease mainly affects the skin, peripheral nerves, mucosa of the upper respirator tract, eyes and other superficial parts of the body such as ear lobules. The early evidence of leprosy was observed in an Egyptian skeleton of 2nd century BC and in two Coptic mummies of the 5th century AD.[1] The disease is classified into five groups according to immunological response i.e. tuberculoid (TT), borderline with tuberculoid features (BT), lepromatous with borderline features (BL) and lepromatous leprosy (LL) as well as indeterminate (I).[2] Usually diagnosis of leprosy is made on clinical signs and symptoms, however finding of *M. leprae* in affected tissue confirms the diagnosis. In an endemic country or area, an individual should be regarded as having leprosy if patient shows one of the following cardinal signs: 1) hypopigmented skin lesions with definite sensory loss; 2) positive skin smears.[3] The presence and number of *M.*

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leprae found in smears are related to the type of leprosy, stage of development and the effect of the drug treatment.[4]

Leprosy has struck fear into human beings for thousands of years, and was well recognized in the oldest civilization of China, Egypt and India.[1] The number of individuals who over the millennia have suffered its chronic course of incurable disfigurement and physical disabilities can never be calculated.[3] In 1997, there was an estimation of 1.15 million cases in the world, most of them concentrated in South. East Asia, Africa and South America.[2]

The leprosy situation in Pakistan is fairly accurately known. Total number of estimated cases of leprosy up to 2003 in Pakistan was 51,051. Out of these 50% cases belong to Karachi. In Larkana region leprosy is also prevalent and number of registered cases is 684. Leprosy is not a lethal disease but it is one of the crippling diseases, if not treated early and properly it may end with many deformities. These deformities and disabilities may be responsible for personal and social problems for leprosy patients, stigmatization and rejection in the society.[4] Two types of deformities are encountered in leprosy patients, primary deformities are due to direct involvement of tissues and peripheral nerves with *M. leprae* causing sensory loss or motor paralysis while secondary deformities occur as a result of damage to the anaesthetic parts of the body.[5] Deformities and disabilities are generally more common in multibacillary leprosy than paucibacillary leprosy.[6] It was estimated that in Larkana District deformities and disabilities rate is 11%.[6]

This study was planned to find out the frequency and severity of the leprosy related deformities and disabilities in diagnosed cases of leprosy and make a plan to educate and treat them to save from related deformities and disabilities.

Patients and methods

The study was conducted at Leprosy Unit Cum Health Education Cell, Chandka Medical College Hospital, Larkana, Sindh. The record of already diagnosed cases during the period from 2002 to 2006 was observed/analysed and included in the study. These already diagnosed cases were registered at Leprosy Cell, Larkana. Patients frequently visited the centre and leprosy cell officials also visited the patients frequently at their native places. The cases were confirmed by the recommended method of recording *M. leprae* numbers in skin smears (bacillary index). Patients were included in this study based on the following criteria of inclusion.

1. Insensitivity of hands or feet
2. Ulcers and injuries/scars
3. Mobile claw hand
4. Slight absorption
5. Wrist drop
6. Foot drop
7. Contracture
8. Severe absorption
9. Stiff joints
10. Lagophthalmos
11. Blindness
12. Iritis or keratitis

The confirmed cases with deformities and disabilities included in the study were

analyzed according to WHO grading of disability and deformity index in **Table 1**.

Table 1 WHO grading of disability and deformity index hands and feet and eyes [2].

Hands & feet	
Grade 0	No anaesthesia, no visible deformity or damage.
Grade 1	Anesthesia present, but no visible deformity or damage.
Grade 2	Visible deformity or damage present.
Eyes	
Grade 0	No eye problem due to Leprosy, no evidence of visual loss
Grade 1	Eye problem due to leprosy present, but vision not severely affected as a result (vision 6/60 or better, can count figures at six meters).
Grade 2	Severe visual impairment (vision worse than 6/60 inability to count figures at six meters) lagophthalmos, irridocyclitis and cornea opacities.

Results

The patients included in the study were already diagnosed and registered at Leprosy Cell, Larkana. Patients belonged to low socio-economic group and poor class of the region, comprising of present Larkana as well as present Kamber-Shahdadkot District. Most of the patients included in this study belonged to remote and backward areas of mountainous belt of the region including Taluka Shahdadkot, Kamber, Mirokhan, Warah and Nasirabad. Total 100 registered diagnosed cases of leprosy with deformities were included in this study. Deformities and disabilities were noted in 55 (55%) of cases. Out of these, 40 (40%) were males and 15 (15%) were females of age group 22 to 75 years. Regarding the body parts hands were affected in 21 (21%), feet in 20 (20%) cases and eye in 14 (14%) cases. The affected sites and sex-wise distribution are shown in **Table 2**. The grading of disability/deformity in multibacillary (MB) and paucibacillary (PB) leprosy is shown in **Table 3**

Table 2 Deformities/disabilities of hands, feet and eyes.

Deformity/disability	*Male n=40*	*Female n=15*	*Total n=55*
Hands = 21 (21%)			
Anaesthesia	3	2	8
Claw hands	3	1	4
Resorption of fingers	2	1	3
Contractures	2	1	3
Ulceration	1	1	2
Wrist drop	1	0	1
Feet = 20 (20%)			
Anesthesia	6	3	9
Claw toes	3	1	4
Resorption of Toes	4	0	4
Ulceration	1	1	2
Foot drop	1	0	1
Eyes = 40 (40%)			
Madarosis	4	2	6
Blurring of vision	2	1	3
Lagophathalmos	2	0	2
Marked loss of vision	1	1	2
Blindness	1	0	1
Total	40	15	55

Discussion

Deformities are the most striking manifestation of leprosy. Deformities seen in leprosy-affected persons range from a mild degree such as small areas of anaesthesia on the hands, to a very severe degree such as shortening of fingers and thumbs in both hands, bilateral wrist drop, ulceration and fixed deformities of both feet rendering them useless for walking and loss of vision in both eyes.[7] Involvement of more than one body part such as hands, feet or eyes may be considered as more severe than involvement of only one body part. Ocular morbidity is a more serious impairment

Table 3 Disability/deformity grading in multibacillary (MB) and paucibacillary (PB) leprosy of patients.

Grade	*MB leprosy n =52*	*PB leprosy n=48*	*Total n=100*
0	38	42	80
1	3	2	5
2	11	4	15

causing distresses and incapacitates the affected person greatly. The purpose of this study was to determine the magnitude of various deformities in leprosy patients of Larkana Region and to highlight the importance of health education to patients, their families, friends and community.

In this study, the deformities resulting in disability were notified in 55 cases out of 100 cases, making deformity and disability index of 55%, which is about equal to that presented by Marie Adelaide leprosy centre, Karachi in 2002. In another study, conducted by Kunst on the relationship of skin ulcers and physical deformities, also showed that grade 2 deformities were present in 62% patients.[8] Yet another survey, by Nagabhushanam in India on gross deformities in leprosy, revealed deformity index of 39.5% and the commonest deformity observed was claw hand.[9]

In our study, the commonest deformities in eyes were madarosis and blurring of vision. The gross disabilities/deformities of hands and feet were seen more in association with multibacillary leprosy than paucibacillary leprosy.[10] The WHO estimates the risk of deformity occurring *de novo* while under multidrug therapy to be about 1-5 per 1000 person years.[11] The figure was quite high in our study. These deformities/disabilities in patients with leprosy not only result in biomedical but also psycho-social consequences which also extend beyond affected persons to influence their families as well. Rehabilitation and good health education to patients, their family, friends and community, is the process of preventing this phenomenon which enables one to repossess ones' role and functions in society.

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