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Indigenous leprosy in Dera Ghazi Khan Division, Punjab, Pakistan

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Abstract

Objective: The study objective was to identify the main foci of leprosy in Southern Punjab and identify the problems precipitating prevalence of disease.

Materials and Methods: This was a retrospective study, which started from 2017 to 2012. A total number of sixty five cases (n=65) were detected during this study period. Snowball sampling technique was used. Every year contact survey was carried out for new case detection and compliance of medication. Family members of patients were examined for any anesthetic patch or nerve involved or any deformity. Grading of the deformity, if present, was also done according to WHO criteria. Data analysis was carried out by using SPSS 18.0 version. Chi square test was applied and P-value calculated. Snow ball sampling procedure was applied to study disease burden, a suitable method to cover less population, time and cost management of study.

Results: In this study, the total number of new leprosy patients detected were sixty five; female patients (n=49) were 75.38% and male patients (n=16) were

24.62%. Prevalence of Pauci- bacillary disease was 50.77%. Maximum number of cases was reported from rural area of Southern Punjab. Main foci of disease were concentrated in tribal areas of Dera Ghazi Khan and RajanPur.

Conclusion: Leprosy is still evidenced in tribal areas of Dera Ghazi Khan, and Rajan Pur.

Keywords: Leprosy, Social Stigma, Tribal Areas.

Introduction

Leprosy is a continuous social stigma due to physical deformities caused by disease but it has ceased to be a public health problem[1]. Physical and Psychological disabilities has made leprosy most feared and stigmatizing of all diseases[2].World Health organization reported decreasing prevalence of leprosy in 2012. According to WHO, at the beginning of 2012 globally registered cases of leprosy were 181,941 [3].

The annual new case detection rate continues to increase in all regions indicating continued transmission. Low numbers of cases were reported from African region signifying decline in leprosy prevalence in the region during 2015. A marginal increase of new cases in South Sudan and Somalia were reported during 2016[4]. Main contributing countries to leprosy burden are India (58%), Brazil (16%) and Indonesia (9%). Overall, 83% of new cases detected are reported from these three countries[5]. WHO has implemented to enhanced global strategy for further reduction in leprosy rate in endemic countries. Main objective was to reduce new case detection in grade 2, i.e., visible deformity 35% for one Lac population by the end of 2016[6].

Leprosy is not an uncommon disease in Pakistan and is endemic in Northern areas[7]. By efforts of leprosy control program, leprosy prevalence has reduced to 1/10000 in Pakistan. Leprosy risk determinants are age, sex and household contacts. High incidence is reported at age 10-14 years and mean age of onset is being less than 35 years old[8]. In 1984, Ruth Pfau reported that leprosy is

endemic in northern areas, Azad Kashmir, KPK and Baluchistan. Punjab has largest population, with good living standards, and is mainly free of leprosy. Indigenous leprosy is only found in D.G Khan, an underdeveloped district adjacent to Baluchistan and K.P.K[9].

Leprosy has low mortality and high deformity rate. Complications of this disease are a result of nerve damage, immunological reactions and bacillary infiltration. Mycobacterium leprae parasitizes skin macrophages and Schwann cells of peripheral nerves. Other organs affected are eyes, lymph nodes, joints, testicles and respiratory tract[10].

The deformities and disabilities resulting from this disease affect personal, psychological, social and spiritual well-being of patients and their families. General public and families of patients have negative attitude towards leprosy. Uneducated masses lack knowledge about cause, mode of spread and duration of treatment. This results in unhealthy attitude towards leprosy patients, which leads to chronicity[11]. Mycobacterium leprae directly infiltrate tissues and peripheral nerves resulting in sensory loss (anesthesia) or motor paralysis. Secondary deformities occur as a result of damage to anesthetic body parts. Deformities and disabilities are more common in multi-bacillary leprosy [12].

In Pakistan, leprosy field workers are involved in leprosy control program. Contact surveys are conducted 1-2 times every year. In Pakistan, leprosy control program is funded and controlled by two international non-governmental organizations, Aid to Leprosy Patients (ALP) and Marie Adelaide Leprosy Center (MALC). The ALP is working in Punjab and Hazara division of Khyber Pakhtoon-Khawa (KPK), while MALC is working in Sindh, Baluchistan, remaining parts of KPK, Azad Kashmir and Gilgit Baltistan. There are 157 leprosy centers working in Pakistan for control of leprosy[13]. The retrospective study was conducted from 2017-2012.The study objectives were to identify the main foci of leprosy patient in different areas of D.G Khan Division, and to evaluate the incidence, deformity rate and child rate along with deformity grade

of newly diagnosed cases of leprosy in studied area. Problems precipitating the prevalence of disease and patient deformity like shortage of safe water, both for drinking and washing, poor education, no infrastructure of roads were also studied.

Material and Methods

The study was conducted for last six years 2017-2012 in Dera Ghazi Khan Division. A total number of 65 patients were included in this study. Every year, a contact survey was carried out to observe the continuity of therapy and to find out new cases. Family members of leprosy patient were examined for any anesthetic skin patch and if any nerve is involved. This study was a retrospective study from 2017-2012. The sampling technique was snow ball sampling from the patients presented and detected during contact surveys by leprosy center of DHQ teaching hospital Dera Ghazi Khan. A total of 4-5 skin smears were taken, 2 from both ear lobules, 1 from forehead, 1 from suspicious site and 1 additional in case of nerve involvement. These smears were sent to leprosy hospital Rawalpindi for confirmation of diagnosis. Our study patient's lesions were evaluated by histo-pathologist to confirm the diagnosis. Inam-ullah et al reported that histopathology of lesion is helpful for diagnosis, classification and management of Leprosy Patients[14]. The confirmed cases of leprosy with deformity or without deformity both were included in the study. All leprosy study activities and treatment were financed and supervised by a Non-governmental organization, Aid to Leprosy Patient. We analyzed leprosy patient data at leprosy center, DHQ teaching hospital Dera Ghazi Khan for last six years. After confirmation of diagnosis, medicines were provided to patients at their door step by leprosy program field workers. Patients who had taken anti leprosy therapy were excluded from the study. All the patients were examined by trained doctors for leprosy, case detection and treatment. All the patient

details were recorded in designed Performa. Statistical analysis was done with SPSS version 15.0, Chi-square test was used for data analysis.

Deformity grading was done according to WHO grading of disability and deformity index given below[15].

Results

Out of 65 patients with leprosy, 52 patients were female and 13 patients were male. The mean age of participants was 35 ± 2.5 years. All (100%) patients were resident of rural areas of district D.G Khan, RajanPur and Layyah. Maximum numbers of cases were reported from tribal areas of district Dera Ghazi Khan and district Rajan Pur. Our study showed that the number of leprosy cases during 2014 was 11, during 2016 were 28, and during 2017 were 11. Pauci-bacillary disease cases were (n=33), more common than multi-bacillary disease (n=32). Only four cases presented with grade 2 disability and one patient developed grade 1 deformity at time of diagnosis (Table 2).

The total study population during 2012-17 was 3.750 million, 3.763 million, 3.834 million, 3.907 million, 3.982 million and 4.060 million, respectively [16]. The highest incidence of leprosy cases was observed during 2016 (0.07), which was the highest during last six years. The deformity rate was reported among 66% (2/3) cases during 2013 affecting hands only and decreased deformity rate upto 10.7% (3/28) in 2016 involving both hand and feet. Child (infection) rate in our study was 0.00%. Out of 65 cases, only four cases were having deformed hand and one case had deformed feet (Table 3).

Discussion

Leprosy is a neglected tropical disease, which is indigenous as well as migration problem in our country. Both curative and preventive measures are needed to reduce the disease burden. Poor knowledge about disease, community attitude, poor hygiene and unsafe water supply are the major problems of leprosy

patients. Health education might be effective for changing attitude of the community about leprosy[17]. Majority of the affected (fishing) community in Karachi was unaware about leprosy center working in the area. People did not attend seminars or health education sessions on leprosy conducted by the center but highly positive attitude was reported with significant level of stigma[18]. In our study, most of the patients and family members were illiterate and had poor knowledge about leprosy.

WHO has reported slow decline in leprosy prevalence at global level. The slow changes in incidence need decades and are related to economic development, safe water supply as well as good leprosy control practices. Our study subjects had similar problems, i.e., poor economic status and no safe water supply[19]. Multiple drug therapy (MDT) has reduced the duration of treatment and number of patients, hence reduced burden on health services. Prevalence of leprosy was controlled due to multidisciplinary health care provided by Aid to Leprosy Patient (ALP). Ganapati reported that ocular disturbances were common among 73% of patients and 33% of leprosy patients had blindness. In our study, no complications related to eye were reported. Nerve damage was the most common cause of deformities. Our study reported 7.7% cases had limbs deformity at time of diagnosis. Our findings regarding eye complications were contrary to Ganapati [20].

Leprosy prevalence was reported variably from different parts of the world. Similarly different areas showed different prevalence in various areas of Pakistan. Multi-bacillary leprosy was seen in >98% with greater frequency of disabilities in male patients in K.P.K, Pakistan. In our study, numbers of multi-bacillary cases were not much different than that of pauci-bacillary patients. In this regard, our study findings are in accordance with the finding of Schreuder et al regarding higher prevalence of pauci-bacillary type of leprosy[21]. The highest incidence rate in our study was 0.70 during 2016, which was higher than the rate reported in Punjab (0.09) and overall Pakistan 0.24 during 2016 as

reported by MALC. In this study, child rate was 0 % and deformity rate was 10.7% during 2016. This study finding regarding child rate and deformity rate were in accordance with leprosy elimination analysis reported by MALC[22].

Pakistan has controlled the disease with a moderate burden, as 400 cases of leprosy were reported during 2012. Leprosy is concentrated in northern areas, primarily in Chitral[23]. Our study area has high burden pockets, especially a low resource setting, where equity of access is major issue. During 2016, 397 new cases of leprosy were reported; out of them 40 were children. Slowly decreasing trend of new case detection was reported, which is contrary to this study finding. Lobo et al reported that 300/year new cases of leprosy are registered in Pakistan and this contributed less than 1% of cases under treatment[24]. Zia et al reported childhood leprosy was more common among female children and 46% ulnar nerve deformity cases were reported. Our study findings of hand deformity rate are in accordance with Zia et al [25].

WHO has set three targets to be achieved by 2016-2020; he designed targets are Zero transmission, Zero disability in children and Zero discrimination. Extensive hard work is needed to achieve target of leprosy free Pakistan till 2020[26].

Conclusion

Leprosy is still demonstrated in the tribal areas of Southern Punjab.

Declaration: None

Ethical Approval: Study protocol was approved by institutional Review Committee.

Disclaimer: None to declare.

Competing Interest: The authors declare that they have no competing interest.

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Informed Consent: Written informed consent was obtained from all participants.

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Table 1: WHO Grading of Disability and Deformity Index (Hands, Feet and Eyes)

Hands and Feet	
Grade 0 (G-0)	No anesthesia, no visible deformity or damage.
Grade 1 (G-1)	Anesthesia present, but no visible deformity or damage.
Grade 2 (G-2)	Visible deformity or damage present.
Eyes	
Grade 0 (G-0)	No eye problem due to Leprosy, no evidence of visual loss
Grade 1 (G-1)	Eye problem due to leprosy present, but vision not severely affected. (Vision 6/60 or better, can count figures at six meters)
Grade 2 (G-2)	Severe visual impairment (vision worse than 6/60 inability to count figures at six meters) Lag-ophthalmic, iridocyclitis and corneal opacities.

Table 2: Leprosy Prevalence in D.G Khan Division (N=65)

Year		2012	2013	2014	2015	2016	2017
Types of Leprosy	MB	4★	3★	5★	2★	14★	04
	PB	2★	0	6★	4	14★	07
Sex Distribution	M (n=13)	2	0	1	3	6	01
	F (n=52)	4	3	10	3	22	10
Deformity	Number		2(G-2)			2(G-1) 1(G-2)	
Total Patients (n=65)		6	3	11	6	28	11

★ Major focal areas are tribal areas of D.G Khan and RajanPur.

Table 03: Incidence rate, deformity rate, child rate and site of deformity distribution among study population (N=65)

Year		2012	2013	2014	2015	2016	2017
Total Population (millions)		3.750	3.763	3.834	3.907	3.982	4.060
Total New Cases		6	3	11	6	28	11
Incidence Rate (in 100,000)		0.16	0.07	0.29	0.15	0.70	0.27
Deformity Rate		0%	66%	0%	0%	10.7%	0%
Child Rate		0%	0%	0%	0%	0%	0%
Site of Deformity	Eye	-	-	-	-		-
	Hand	-	2	-	-	2	-
	Foot	-	-	-	-	1	-