

Original Article

Prevalence of cutaneous leishmaniasis in Lower Dir District (N.W.F.P), Pakistan

Sami Ullah*, Abdul Hamid Jan**, Shad Mohammad Wazir*, Nawab Ali**

* Department of Dermatology, Lady Reading Hospital, Peshawar.

** Department of Zoology, University of Peshawar, Peshawar.

Abstract *Back ground* Cutaneous leishmaniasis (CL) is a common disease in northern areas of Pakistan.

Objective To determine the prevalence of CL in Lower Dir and its correlation with age, sex, site and number of lesions.

Patients and methods A total of 224 subjects of different age groups were examined. Of the total (224) individuals, 50.89% were found positive for CL. The prevalence of leishmaniasis was also examined in relation to age, sex, site of involvement, number of lesions and nature of the lesions.

Results The prevalence of leishmaniasis was 55% in local population and 45% in Afghan refugees ($p>0.05$). The prevalence of leishmaniasis was the highest in the 1-15 year age group (43.8%) than older age group. The prevalence of leishmaniasis was higher in males (60.5%) than in females (39.5%), with male to female ratio of 1.5:1. The lesions were more frequent on face (34.2%) than the other sites of the body. The majority (56.70%) had single lesion, with a mean number of 2.14 lesions per case (range 1-10 lesions). 58.10% patients presented within first two months (range 1- 8 months). The wet lesions were observed more frequently (81.3%) than dry type (18.7%). Also the prevalence rate in patients, previously treated with antimonial drugs was found lower (18.86%) than untreated patients (60.81%).

Conclusion Prevalence of cutaneous leishmaniasis was similar in local residents and Afghan refugees, both sexes and age groups. Wet type is more frequently seen than dry type and usually presents as single lesion.

Key words

Leishmaniasis, prevalence, Lower Dir.

Introduction

Leishmaniasis is not a single entity but comprises a variety of syndromes, due primarily to a variety of parasites affecting different populations, and each related to characteristic vectors and animal reservoir. The clinical

spectrum is so wide that it ranges from asymptomatic infection to that with a huge mortality; the lesion may be confined to the skin i.e. cutaneous leishmaniasis (CL), or results in hideous mucocutaneous destruction (mucocutaneous leishmaniasis); while the visceral disease (visceral leishmaniasis, commonly known as kala-azar, the black disease), begins insidiously, but in the absence of specific therapy, usually terminates in death.¹

Leishmaniases are endemic in 88 countries (mostly the developing countries), found in all

Address for correspondence

Dr. Sami Ullah Khan

Assistant Professor Dermatology

Department of Dermatology

Postgraduate Medical Institute, Lady Reading

Hospital Peshawar.

E-mail: drkhansu@hotmail.com

continents except Australia and Antarctica. According to WHO, it is estimated that approximately 4,00,000 new cases of leishmaniasis occur annually, with almost 400 million people at risk of the disease. The overall prevalence of leishmaniasis is estimated at 12 million cases with 0.5 million new visceral leishmaniasis cases per year and 1.0-1.5 million new CL cases per year.^{2,3} In 1976, the WHO included it as one of the six items in the UNDP/World Bank/WHO Special Programme for Research and Training in Tropical diseases.^{1,2}

The *Leishmania* species complex is a group of 32 unicellular organisms, obligate parasites in a series of vertebrate hosts, which are transmitted from host to host by the bite of a sandfly of *Phlebotomus* and *Lutzomyia* in Old World and New World leishmaniasis, respectively. *Leishmania* occur in nature in lizards and mammals including canids, rodents (both acting as reservoir host) and primates including man.³

The status of leishmaniasis in Pakistan has been changing. At present both the cutaneous as well as the visceral forms of the disease are being reported from various parts of the country, including N.W.F.P.⁴ Recent reports showing cases of visceral leishmaniasis apparently caused by *L. tropica* indicate that these associations may be changing.⁵

Records are not available as to when the disease was first reported in Pakistan, however, it was in 1935 that a severe outbreak of the disease occurred in Quetta following a severe earthquake.⁶ In 2001, the biggest outbreaks occurred in districts of Dadu and Larkana of Sindh province. A total of 11000 cases were registered during 2001-2002 in the above districts.⁷

The present study was planned to determine the prevalence of cutaneous leishmaniasis in Lower Dir and its correlation with age, sex, site involvement etc.

Patients and methods

This study was conducted in Lower Dir district of N.W.F.P. A total of 224 suspected patients were examined, including both Afghan refugees and local population to investigate the prevalence of cutaneous leishmaniasis. Only those patients were examined whose lesions were clinically suspected of cutaneous leishmaniasis. A proforma especially designed for this study was used to fill in the details regarding name, locality, sex, age, number of lesions, site of lesions, duration of lesions, gross pathology, ethnic group and history of previous treatment with antimonial drugs.

Smears for Leishman-Donovan (LD) bodies were prepared from the margins of the lesions. Both thick and thin smears were made for every patient and stained with 5% Giemsa stain. The diagnosis of CL was confirmed by observing LD bodies in both thick and thin smears.

Prevalence rate was correlated with origin of patients, age groups, sex, site of involvement, type of disease and number of lesions.

Results

Of the 224 patients examined, 114 were found positive, indicating 51% prevalence estimate of leishmaniasis. Out of 224 screened patients, 129 belonged to local population and 95 were Afghan refugees. The prevalence rate of CL was 55% in local population and 45% in Afghan population ($p>0.05$).

Table 1 Demographic data of the study population (n=114).

Subjects	N (%)
Local population	71 (55)
Afghan refugees	43 (45)
Total	114 (51)
Male	69 (60.5)
Females	45 (39.5)
Age groups (years)	
1-15	50 (43.8)
16-30	37 (32.5)
31-45	19 (16.7)
46-60	8 (7.0)
Sites involved	
Face	39 (34.2)
Arms	30 (26.3)
Legs	17 (14.9)
Mixed	28 (24.6)

Table 1 shows the age-specific prevalence of CL. It was highest (43.8%) in 1-15 year group and lowest (7.0%) in 46-60 years group. The prevalence was 60.5% in males and 39.5% in females ($p < 0.05$).

The majority (56.7%) had single lesion, with a mean number of 2.14 lesions per case (range 1-10 lesions). 34.2% had lesions on face. 57.2% had multiple lesions on different parts of the body such as face-arms, face-legs, arm-leg, face-arm-leg and face-trunk etc. 58.1% patients presented within first two months (range 1-8 months). The wet lesions were observed more frequently (81.3%) than dry type (18.7%). The majority 60.8% had not received any treatment whereas (18.9%) had been previously treated with antimonial drugs. Rest had been received with unknown drugs.

Discussion

An outbreak of CL occurred in the area during 1997, in which hundreds of individuals were infected. About 4000 patients have been registered in these two health units after the outbreak. At the time of the survey the disease

was common in both the local population and Afghan refugees.⁸

The present study showed 50.89% prevalence rate of leishmaniasis. The result of Hepburn *et al.*⁹ recorded 61% positive cases in British troops, was slightly different from the present study. However, Sana-Ullah¹⁰ and Nisar¹¹ recorded prevalence rates of leishmaniasis as 4.16% and 6.93%, respectively. The reason of high prevalence in our study was that only clinically diagnosed patients were included. Gul¹² found higher rate of infection in the local population while Nisar¹¹ recorded a higher prevalence rate in Afghan refugees than in local population. The higher prevalence rate of local population recorded in the study was probably due to the fact that in summer 2002, a campaign was held by WHO for eradication of sandflies in Timer Camp for refugee which reduced the infection rate in refugees.⁸ The reason of higher prevalence rate in younger age in the present study is probably due to the fact that they have poorly developed immune system. Similar rates are also recorded by Marri *et al.*⁴ and Bosan *et al.*⁷ The male:female ratio recorded in the present study was 1.5:1 that is similar to results observed by Sana-Ullah,¹⁰ Nisar¹¹ and Marri *et al.*⁴ The higher prevalence in males was probably due to the cultural habits of the area where the females use well-covered dresses, which minimize the chances of sandfly bites. In addition women are obliged to be home before evening, the onset of the period of sand fly activity as observed by Al-Jawabreh *et al.*¹³ Males sleep without shirts during summer, exposing themselves to sandflies. Travelling of males for jobs and restricting their females to houses is another factor for the higher prevalence in males. In the present study all the lesions (except two on trunk) were present on the exposed parts of the body i.e. the sites

available for sandfly bites. Bosan *et al.*⁷ and Nisar¹¹ recorded similar results. In the present study single lesions were observed in most of the patients, which is supported by many previous studies

Conclusion

In order to reduce the prevalence of CL, different steps are recommended i.e. the health professionals and community should be made aware of the disease, the free movement of people across Afghan border should be checked, personal protection from sandfly by using bednets and curtains, elimination of infected dogs and rodents and spraying insecticides in houses, rodent burrows and dog habitatas to eliminate the vectors and reduce the spread of infection.

References

1. Garnham PCC. Introduction. In: Peters W, Killick-Kendrick R, eds. *The Leishmaniasis in Biology and Medicine*. London: Academic Press; 1987.
2. Leishmaniasis. Available at: <http://apps.who.int/tdr/svc/diseases.leishmaniasis>. Geneva: WHO. Last updated on 25.01.2007. Accessed on 20.09.2008.
3. Krier JP, ed. *Parasitic Protozoa, Vol. I*. New York: Academic Press; 1977.
4. Marri SM, Goraya AA, Masoom M *et al*. Leishmaniasis: Disease of young adults, current status in Baluchistan. *Mother and Child* 1999; **37**: 205-12.
5. Ali SA, Iqbal J, Khalil NY *et al*. New horizons in Leishmania cultivation. *J Coll Physicians Surg Pak* 1997; **7**: 53-7.
6. Haq G. Leishmaniasis. *J Pak Med Assoc* 1989; 223 – 224.
7. Bosan AH, Amanullah Dil AS, Kakar F *et al*. The efficacy of intralesional treatment of cutaneous leishmaniasis with Glucantime. *Pak J Med Res* 2002; 41(2): 54 – 57.
8. Basic Health Unit. Chakdara and Timer Camp. Record of Cutaneous Leishmaniasis from 1997-2003.
9. Hepburn NC, Tidman MJ, Hunter JAA. Cutaneous leishmaniasis in British troops from Belize. *Br J Dermatol* 1993; **128**: 63-8.
10. Sana-Ullah. *Incidence of Cutaneous leishmaniasis in North Waziristan Agency (N.W.F.P.) Pakistan. M.Sc Thesis*. Peshawar: University of Peshawar; 2000.
11. Nisar N. *Prevalence of leishmaniasis in suspected population of North Waziristan: A comparative analysis of Afghan Refugees and Local Population. M.Sc Thesis*. Peshawar: University of Peshawar; 2002.
12. Gul B. *Incidence of leishmaniasis in District Loralai, Baluchistan. M.Sc. Thesis*. Peshawar: University of Peshawar; 2001.
13. Al-Jawabreh A, Barghuthy F, Schnur LF *et al*. Epidemiology of cutaneous leishmaniasis in the endemic area of Jericho, Palestine. *Eastern Mediterranean Health Journal* 2003; **9**: 805-15.