Human Cutaneous Leishmaniasis in Three Districts of Sindh in Pakistan

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Abstract: This study was conducted to record cases of cutaneous leishmaniasis in human beings from three districts i.e., Dadu, Hyderabad and Jamshoro in Sindh, Pakistan. A total number of 102 subjects of different age and sex groups were put under investigation. Ninety four (92.157%) were found positive for cutaneous leishmaniasis. The highest leishmaniasis infection (41%) was recorded in 21-30 years' age group. The prevalence of cutaneous leishmaniasis was higher in males, (56%) than in females, (44%). The active lesion was more frequent on face (35%), on legs (26%) and on hands (25%) than other exposed parts of the body. Forty five percent of cutaneous leishmaniasis case were recorded in Dadu, 35 percent in Hyderabad, and 20 percent in Jamshoro.

Keywords: Cutaneous Leishmaniasis, Human infection, Hyderabad, Jamshoro and Dadu, Sindh.

INTRODUCATION

The purpose of present study was to assess the status level of cutaneous leishmaniasis infection in human beings in three districts (Hyderabad, Jamshoro and Dadu) of Sindh, Pakistan.

Sand fly is a common name applied to minute, biting fly. Sand flies are important as vectors of numerous animal and human diseases, including kala-azar or dumdum fever, oriental sore or cutaneous leishmaniasis, muco cutaneous leishmaniasis and sand-fly fever. These flies are chiefly native to the tropical and subtropical regions of the world. The sand fly comprises of five genera and over 700 species. Approximately 30 species are thought to be involved in transmission of *Leishmania* parasites [1].

Female sand flies have a piercing and sucking mouthparts and subsist on mammalian blood, biting mostly at night. They breed in dark, damp, mossy ground or in crevices of shady rock walls. The most common disease transmitted by a sand fly is known as sand-fly fever, *Phlebotomus* fever, or *pappatasi* fever. Species of the *Leishmania* parasitic protozoans are transmitted by the bite of an infected female phlebotomine sand fly [2]. Cutaneous leishmaniasis may occur anywhere on the body but the most likely sites are exposed parts. The initial Papule rapidly gives rise to an ulcer.

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According to World Health Organisation [3] leishmaniasis is endemic in 88 countries, with a total of 350 million people at risk. Leishmaniasis is a major health problem worldwide. It is also particular in the rural areas of Pakistan. There are about 1.5 million cases of cutaneous leishmaniasis each year worldwide, with the bulk reported from Afghanistan, Iran, Algeria, Saudi Arabia, Peru and Pakistan [4]. In Pakistan, most of the cases of *Leishmania* species have been found in Balochistan, Khyber Pakhtunkhwa and Azad Kashmir [5]. It is believed that world -wide 12 million people are effected by leishmaniasis. It is very prevalent in Pakistan and has been reported from all the provinces and almost all the major cities.

MATERIAL AND METHODS

The present study was carried out to record the cutaneous leishmaniasis in three districts of Sindh, Pakistan. A total of 102, *Leishmania* suspected cases with active lesions were clinically diagnosed. For this purpose, a pre-designed, performa was filled with informations i.e. name, father's, name, age, sex and site of involvement.

Sample Collection and Smearing

Exudates (94) from cutaneous leishmaniasis lesions were collected from patients visiting Dadu, Hyderabad, Jamshoro hospitals and basic health units and randomly from adjoining villages in the study area. During specimen collection, each patient was handed over a printed questionnaire consisting of informations regarding name, father's name, age, sex, site of lesion,

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patient's previous history of the diseases, family, use of insecticide, impregnated bed nets and insect repellents and any previous diagnosis through microscopic examination and or biopsy test. Before exudates collection the skin lesion was sterilized with 100% ethanol. The active raised margin of the lesion was then pressed in between thumb and forefinger and punctured using a sterile blood lancet. The exudate from punctured margin was placed on both ends of the examination slide on the same side. Exudate on one end of the examination slide was smeared thick, while the other end was smeared thin, air dried and fixed in 100% methanol for 2-3 minutes [6].

Staining and Diagnosis by Microscopy

The slides were dipped in working giemsa stain for 45-60 minutes in a staining jar. After staining the slides were rinsed by dipping 3-4 times in the giemsa sorenson's (buffer) and air dried by placing upright in a rack. After staining, the slides were observed under oil immersion objective (10 x 100 magnifications) to see intra-macrophagic amastigotes of *Leishmania* species.

RESULTS

A total number of 102, subjects of different age and sex groups were put under investigation. Out of 102 suspected victims, 94 (92.157%) were found positive for cutaneous leishmaniasis. The highest leishmaniasis infection (41.00%) was recorded in 21-30 years age group. The prevalence of leishmaniasis was higher in males, (56%) than in females, (44%). The active lesion were more frequent on face (35%), on legs (26%) and on hands (25%) than other partly exposed parts of the body (abdomen, 14.0%).

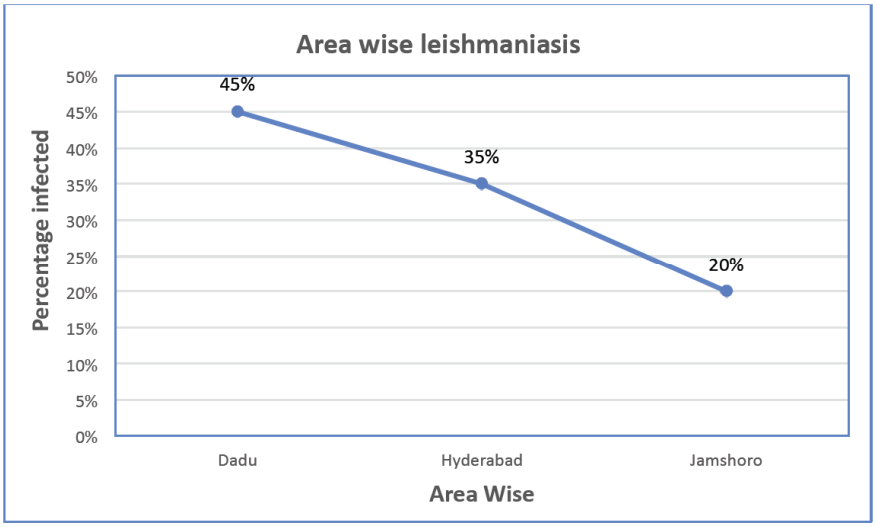

Figure 1: Reveals the result of Leishmaniasis in various districts of Sindh, Pakistan. According to this graph, highest rate of infection (45%) was recorded in district Dadu, followed by (35%) in Hyderabad and (20%) in Jamshoro district, Sindh, Pakistan.

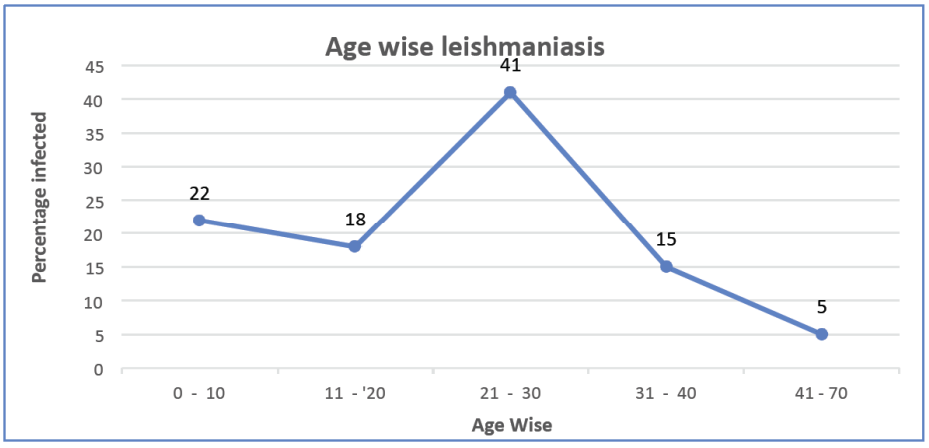

Figure 2: Reveals age-wise distribution of infection. According to this graph, highest rate of infection (41%) was recorded in victims aging between 21 to 30 years, whereas lowest rate of infection (5%) was observed in victims aging between 41 to 70 years.

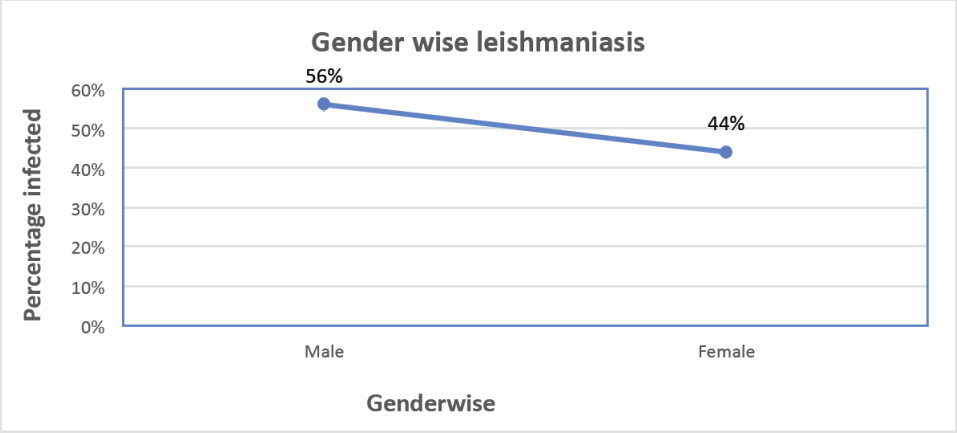

Figure 3: Shows gender wise infection distribution. This reveals more infection (56%) in males as compared to less infection (44%) in females.

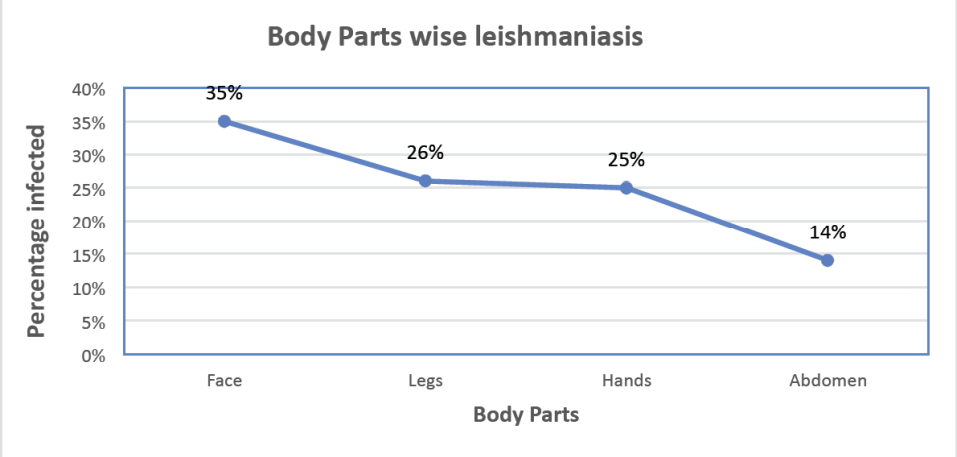

Figure 4: Shows body part wise infection. This graph reveals highest infection (35%) on face, followed by (26%) on legs, (25%) on hands and (14%) on abdomen.

Figure **1** shows infection in three districts i.e. forty five percent of cutaneous leishmaniasis cases reported in district Dadu, followed by 35 percent in district Hyderabad and 20 percent in district Jamshoro, Pakistan.

Figure **2** in terms of age infection relationship, reveals that the rate of infection was 22 percent in the age of 0-10. Victims with age group from 11-20 had 18 percent infection; whereas 41 (highest percent) infection was recorded in victims of age group 21-30 years old.

16 percent in the age group of 31-40 years and 5 percent in the age group of 41-70 years.

Figure **3** reveals gender wise distribution of infection with cutaneous leishmaniasis. It is apparent that, more males (56 percent) were infected as compared to females (44 percent).

Figure **4** shows body parts wise cutaneous leishmaniasis infection in study area. According to data, face was the most affected area, as 35% victims were having lesions on their face, followed by 26% on legs, 25% on hands and 16% on abdomen.

DISCUSSION

The human leishmaniasis comprises a variety of parasites which affect different populations and is endemic in 88 countries particularly in developing countries [7].

The disease is reported from quite a few areas of Pakistan including Balochistan, Khyber Pakhtunkhwa, Punjab and Sindh. In Sindh province, most of the cases have been reported in newspapers revealing presence of infection in districts Jacobabad, Shikarpur, Qambar Shahdadkot, Dadu, all the way up to Thano Bulla Khan and Thano Ahmed Khan in South of Pakistan.

The purpose of present study was to assess the status level cutaneous leishmaniasis infection in human beings in three districts (Hyderabad, Jamshoro and Dadu) of Sindh, Pakistan.

In the present study, highest infection was reported in district Dadu, followed by Hyderabad and Jamshoro districts. Data on cutaneous leishmaniasis in these three districts is the first report of its kind, hence it cannot be compared with the finding of other researchers as far as prevalence is concerned. However, there are reports from other parts of country. Nawaz *et al.* (2010) [8] found only 6% infection in Peshawar, which is quite low when compared with present findings. This may be attributed to difference in sampling area i.e. the recorded data from north of Pakistan, where as our data came from south of Pakistan, where climatic condition may be favouring for sandflies. Bhutto *et al.* (2008) [9] on the other hand recorded 1640 cases of cutaneous leishmaniasis during the 15 months' study periods. Out of 1640, 1170 victims (71.34%) were from the residents of different cities of Sindh, province i.e.

Jacobabad, Ratodero, Shahdadkot, Qambar, Warh, Mehar, Dadu, Dokri and Larkana. They concluded that, every year the number of cases was increasing dramatically. Keeping in view the findings of Bhutto *et al.* (2008) [9] we also concluded that the differences in our finding with that of Nawaz *et al.* (2010) [8] may be due to fluctuations in parasitic infection that may be decreased or increased periodically depending on multiple factors.

Shoaib *et al*. (2007) [10] and Nawaz *et al.* (2010) [8] found highest infection i.e. 46.25%, (10.96%) respectively in children aging from 09 years in age. whereas, in present study, the highest rate of infection (41%) was recorded in 21-30 years of age group old victims. This again could be due to different geo-climatic conditions, cultural differences in living conditions.

The present study apparently indicates that males were 56% infected as compared to females (46%). Our findings are in close agreement with findings of Hayat *et al.* (2013) [11]. They reported that the prevalence in males was high (56%) as compared to females (43%) in upper and lower Dir, Khyber Pakhtunkhwa, Pakistan. This trend was also reported by Farahmand *et al.* (2011) [12] and Bari and Rahman (2006) [13] who reported 63. 8% males infected with leishmaniasis against 36.2% infection in female and 90% and 10% infection in males and females respectively. This may be due to long time exposure of males to vector fly and also due to different dress code, where females are supposed to cover most of their body parts whereas males have benefit to wear otherwise.

In the present study 35% lesions were recorded on the face, 26% on legs, 25% on hands and 16% on abdomen while, [8] also found higher infection on face with majority of lesions on face however, [14, 15], observed majority puff lesions on the extremities. There is logic behind face to be affected more as during sleeping, one may cover rest of the body whereas face is all time exposed of the body and provides chance to vector fly for biting.

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