Prevalence and treatment outcomes of cutaneous leishmaniasis in Baluchistan, Pakistan

Abstract:

About 20 species of the genus Leishmania are responsible for the illness leishmaniasis. It is an underappreciated parasite infection carried by vectors that causes a variety of diseases with different symptoms. There are several risk factors that contribute to its occurrence and prevalence, including starvation, poverty, migration, and inadequate shelter. There is evidence to suggest that the incidence of cutaneous leishmaniasis (CL) is increasing in Pakistan. As a result, it is seen as a major public health concern for the country. Moreover, there has been a higher frequency of CL in places that have seen the largest influx of migrants as well as in areas that border Afghanistan. The purpose of this study is to highlight the current reported prevalence and treatment results of cutaneous leishmaniasis in Baluchistan, Pakistan, taking into account the geographic location and dissemination of the disease over the border area. The purpose of the review was to present the results of research (original publications) that were done to show the frequency of CL in Baluchistan, Pakistan, over the previous five years, as well as the outcomes of its treatments. Key phrases such as "Leishmaniasis", "Cutaneous leishmaniasis (CL)", "Prevalence", "Treatment outcome", "Baluchistan", and "Pakistan" were entered into several literature search engines, such as PubMed, Scopus, Medline search, and Google Scholar, to retrieve relevant articles. The province of Baluchistan has shown sporadic frequency of the CL, according to studies conducted over the past five years. Every district has displayed a separate illness trajectory and set of statistics. Nonetheless, the pattern of rising incidence and prevalence throughout the province was what was consistently seen. According to reports, the first three decades of life and men are considered to be high-risk groups. The arms and legs were noted to be the lesions' most common locations. The purpose of the review was to present the results of research (original publications) that were done to show the frequency of CL in Baluchistan, Pakistan, over the previous five years, as well as the outcomes of its treatments.

Keywords: Prevalence, treatment outcomes, cutaneous leishmaniasis, Baluchistan, Pakistan

Introduction:

Leishmaniasis a diseased condition is caused by approximately 20 species of the genus Leishmania. It is a neglected vector-borne parasitic infection that results in a wide range of illnesses with various symptoms. Numerous risk factors such as poverty, hunger, migration, and substandard housing, attributes to its occurrence and prevalence[1, 2]. It has been reported that "Cutaneous leishmaniasis (CL)" is the most prevalent type of leishmaniasis, which affects 0.6 - 1 million new individuals globally each year. CL is not life-threatening, but it is nonetheless crucial to identify and treat since it can result in stigma, long-term psychological effects, irreversible scarring, and a worse quality of life[3, 4].

It has been documented that in Pakistan, the prevalence of CL is on the rise. Hence it has been considered as a serious public health issue for the nation. Furthermore, areas that border Afghanistan and in the towns that have seen the greatest number of incoming migrants has shown more incidence of CL[5, 6]. Additionally It has been highlighted by Postigo who pointed out that outbreaks of both anthroponotic cutaneous leishmaniasis (anthroponotic CL) caused by Leishmania tropica (L. tropica) and zoonotic CL produced by Leishmania major (L. major) have been observed in Pakistan in particular. While L. major is more prevalent in the nation's rural parts, L. tropica is mostly found in metropolitan areas[7, 8].

It has been reported that following malaria, CL is the second most common vector-borne illness in Pakistan and is endemic in a number of the country's regions. Pakistan's endemic regions for illness include parts of South Punjab, Khyber Pakhtunkhwa, Baluchistan, and Interior Sindh[9, 10]. Considering the geographical location and spread of disease across the border area this review aims to highlight the current prevalence and treatment outcomes of cutaneous leishmaniasis in Baluchistan, Pakistan.

Methodology:

The review was carried out to report the findings of all the original studies published from January 2020 to August 2024 conducted to highlight the prevalence of CL in Baluchistan Pakistan along with its treatment outcomes. The articles were recruited by entering "Leishmaniasis", "Cutaneous leishmaniasis (CL)", "Prevalence", "Treatment outcome", "Baluchistan" and, "Pakistan" as key words in different literature search engines including

PubMed, Scopus, Medline search and Google Scholar. Prevalence highlighted in review articles and studies from other areas of Pakistan were excluded.

Discussion:

Studies from Baluchistan, the largest province by land located in southwest Pakistan have reported that it has the highest burden of CL followed by Khyber Pakhtunkhwa[11]. The geographic dispersion, as stated by Firdous et al., is a result of the sandfly vector, coupled with activities affecting their environment, such as wars, deforestation, and agricultural activities. Animal breeding is anticipated to have a contributing role, along with "dark niches and cracks in the ground providing suitable habitat for the sandflies"[8]. Currently to estimate the accurate prevalence of CL in the province is difficult as the hospitals and clinics function as significant teaching/tertiary care institutions not only treats the individuals of the province, but also include the people belonging to bordering parts of Afghanistan[12]. Therefore, in the current review original articles highlighting the burden of CL published in last five years from various areas of Baluchistan will be discussed.

A study published in 2020 by Aisha khan et al., reported the age and gender wise distribution of the CL along with the frequent site of the lesions. The study was carried out from 2018 -2019 throughout the province Baluchistan with 4072 included participants. According to their results they found 969/4072 (23.79%) cases in year 2018 (August to December) followed by 3103/4072 (76.20%) in year 2019 (January to December). Furthermore, children of age between 0-9 were seemed to be highly affected (39.6%) by the CL in both the years and male predominance was observed in both the years i.e. 55.7%. Additionally according to their analysis hands were the most specific site of infection (24.4%) followed by different areas of face[13].

Darshna Kumari et al., in 2022 reported the infection from three costal areas of province Baluchistan. They included 250 patients from Winder, Uthal and Lasbela areas, according to them there was male predominance and middle age group 11-40 years were suffered the disease more. The lesions were measured and the size of lesion were recorded to be approximately 3cm. Furthermore, they divided the lesion on the basis of wet ulcerative lesion and these were found to be highest in Winder (70%) and dry modular and popular lesion were recorded high in number in Uthal (50%)[14].

Another study conducted by Farzad Khan et al., in Quetta Baluchistan revealed that there were 5032 positive cases of cutaneous leishmaniasis among them 2819 (56.02%) were male and 2213 (43.97%) were female from Quetta. Their results highlighted the trend of male predominance. As per there documentation 2,595,492 was the reported population of district Quetta according to census 2023 however, the cases were recruited from hospital and the sample was comprised of only positive cases hence the findings are not reflecting the actual prevalence rather reporting the frequency of cases reported at various hospitals of district Quetta[15].

A research on the prevalence and risk factors of cutaneous leishmaniasis was carried out in the district of Muslim Bagh (Killa-Saifullah), Baluchistan, Pakistan, among the 207 inhabitants of the various villages 192 people (92.75%) tested positive for CL, there were 64% male and 36% females (n = 69) infected individuals. Contrast to the findings of Aisha khan et., al. 2021 they reported high frequency of age group ranging from 20-29 years and the most frequent site of infection was seemed to be the legs[13, 16].

In a case-control research published in 2021 data related to CL was evaluated they reported the same findings as of reported in following years by various researchers. The additional information that they highlighted was increase in cases during summer and decrease in winter season. They mentioned that the activity of sand fly becomes more frequent during monsoon compared to other seasons hence precautionary measures can be taken to reduce the disease burden[10, 17].

The spread of CL is not limited to only Baluchistan different studies conducted in various areas of Pakistan has documented different pattern of spread. They have corelated it with low socio-economic status, poor life style, illiteracy and unawareness. Areas surrounded by grounds and less agricultural land have been discussed as one of the risk factors because majority of cases have been reported to have that habitat. Additionally, male predominance and school going age have been documented as population at risk which is showing that the sand fly hunts more in open spaces. That also emphasize on implementation of prevention and control program through special community based sanitation or through spray campaigns during the peak seasons[18-21].

The studies reporting the various frequencies of CL in different parts of Baluchistan are highlighting the importance of the issue that the disease spread is not limited to coastal or border areas however the disease has penetrated in the cities and currently thousands of people are suffering the trauma of being infected and ill. In Pakistan considering leishmaniasis a vector born

disease it has been included with malaria control program which is not justified as the sand fly share different morphological and pathological factors as well as their virulence is different therefore till date no any conclusive results have been obtained and disease is rising day by day[22, 23]. The rise in cases of these areas of Baluchistan has been attributed to poor life style, unawareness about the disease course, expensive treatment, lost of followup due to commute issues in the population and lack of support from Government in prevention of this endemic[24-26].

To reduce the prevalence of CL, it is crucial to educate the public and reduce stigma associated with the condition. Conduct monthly or quarterly community-based outreach programs in disease-endemic regions to educate populations on risk factors and infection prevention. Involving important influencers and elders in a community-focused intervention can significantly improve its success rate. Educating individuals on eliminating stigma around dermatological symptoms like CL might be included in such initiatives[27, 28]. Lady health workers (LHWs) can assist women who are unable to attend community sessions. Local health workers (LHWs) provide health education to women and the public in their homes[29].

CL therapy should be straightforward and economical. Currently, therapy involves injecting medication directly into the lesion and typically lasts 4-8 weeks. More cheap and minimally intrusive therapeutic solutions are urgently required[30]. To address the endemic nature of this disease in Balochistan, the government should acquire medications through the Provincial Medical Store Depot on an annual basis, ensuring that each district receives a fair portion based on the number of patients. This should also be included in the yearly budget.

Conclusion:

The reported study in last 5 years have demonstrated scattered prevalence of the CL in the province Baluchistan. Every district has shown diverse course of disease and different data. Though the consistent thing identified was the trend of increase in the incidence and prevalence across the province. The male gender and first 3 decades of life has been reported as the high-risk group. The most frequent sites of the lesions were reported to be the arms and legs. Furthermore, it was highlighted that the improvement in life style, education for the preventive measures and reduction in the stigma associated with CL needs to be emphasized through long term interventions and considering the emergence of new cases the CL should be dealt as a separate health issue and must not be merged with other health programs running in the country.

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