

Is leishmaniasis in Sri Lanka benign and be ignored?

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Abstract

Cutaneous leishmaniasis is now an endemic disease in Sri Lanka. Many studies have focussed on various aspects of this disease but the knowledge, particularly on epidemiological and vector aspects is still poor and the awareness among the general public and even medical/paramedical personnel regarding this disease remains grossly inadequate. The steady increase in the numbers and spread of cutaneous leishmaniasis cases in Sri Lanka and the very close similarity (genotypic and phenotypic) between the local parasite *Leishmania donovani* MON-37 and the parasite causing visceral leishmaniasis in India (*L. donovani* MON-2), considered together with the more recent case reports of autochthonous cases of visceral disease in this country, calls for urgent action for setting up of a surveillance programme to estimate the true disease burden and to implement an organized control strategy, combined with operational and epidemiological research to aid control efforts to avert a potentially major catastrophe of more virulent form of leishmaniasis, particularly the visceral type becoming endemic in Sri Lanka.

Key words *Leishmania donovani* MON-37 – leishmaniasis – Sri Lanka

Introduction

Leishmaniasis has a wide spectrum of disease manifestations, hence, considered as a group of diseases rather than a single disease entity. The three main clinical forms are visceral, mucocutaneous and cutaneous. According to global estimates the disease results in about two million new cases¹ and 2.4 million disability-adjusted life years annually². Until over a decade ago, except for the rare imported case³, leishmaniasis was not prevalent in or reported from Sri Lanka, although in some parts of neighbouring countries like India, Bangladesh and Nepal it represents a major public health problem, with case burden as high as 21 cases per 10,000 population⁴. In Sri Lanka, the first autochthonous case of cutaneous leishmaniasis (CL) was reported in 1992⁵. It is now, however, an established disease in this country^{6–8} with a steady increase in numbers and spread of CL cases, affecting almost all provinces within the past five years^{7,9}. A few cases reported with mucosal involvement¹⁰ and even more alarmingly with fatal

visceral disease¹¹ compound this situation even more. There have been over 2000 cases referred for diagnosis to the Department of Parasitology, Faculty of Medicine, University of Colombo alone, since 2001, from almost all provinces of the country, according to the database maintained in this department with some cases analyzed and published^{6,7,9}. These numbers undoubtedly portray an under representation and would reflect only a fraction of the true incidence of the disease in this island nation.

Clinical presentation and management

The classical presentations of Sri Lankan CL are non-tender, non-itchy papules, scaling nodules or ulcers affecting exposed areas of body, mainly on the extensor surfaces of limbs and the face^{6–8}. The duration of symptoms may vary from few months to few years before help is sought from health services that enable diagnosis and management⁶. This latency may be due to the lack of knowledge and awareness among the general public and more importantly the primary

care physicians. The tendency of most leishmaniasis skin lesions to eventually self-heal is also likely to contribute to the more laid back attitude towards its management. The larger hospitals with specialized laboratory facilities have the means to confirm the diagnosis by visualization of parasites in lesion aspirates, slit-skin scrapings and/or skin biopsy specimens. Furthermore, a few established laboratories in the country also carry out molecular diagnosis. However, in most cases the diagnosis is based on the clinical picture, especially in remote areas where laboratory facilities are not readily available. At present the main modality of treatment used is cryotherapy, which is available in most district-level hospitals though the patients from remote areas have to undergo many hardships to travel long distances to access treatment, which is required to be repeated for several weeks. In some major hospitals with functional dermatology units, sodium stibogluconate is also used as a local infiltrate, though the availability of this drug is limited due to its high cost.

Parasitological aspects

The causative organism of CL was isolated and propagated in this laboratory¹²⁻¹⁴ and confirmed as *Leishmania donovani* MON-37 both by isoenzyme characterization¹⁵ and molecular typing methods¹⁶. This zymodeme has been previously known to cause human visceral disease in other locations like India¹⁷ and Israel¹⁸ and ours was the first report of its isolation from cutaneous lesions¹⁵. Such occasional dermatotropism of *L. donovani*, as seen in Sri Lanka and few other locations like Sudan¹⁹ emphasizes the possibility of a genetic susceptibility of certain individuals for cutaneous form of the disease as speculated previously^{9,15}, but requires confirmation through detailed genetic-epidemiological studies. This infectious agent is very closely related to *L. donovani* MON-2, the most common zymodeme reported from India²⁰, which manifests in the form of visceral leishmaniasis in Indian patients. The two strains differ by the mobility of a single isoenzyme 6-phosphogluconate dehydrogenase (6PGDH) as detected by isoenzyme characterization¹⁵, which is

considered as the gold standard in species diagnosis. Sequence analysis of 6PGDH enzyme demonstrated a single amino acid change, as a result of a single nucleotide difference between the two strains¹⁶. Phylogenetic relationship among the *L. donovani* strains of neighbouring countries have also been investigated with microsatellite analysis, demonstrating a clear geographical clustering of *L. donovani* isolates with a separate cluster formed by the Sri Lankan isolates, which is closely related to individual clusters formed by *L. donovani* isolates from neighbouring countries like India, Bangladesh and Nepal¹⁶. These findings support a fairly long history of the local parasite that may have prevailed within the country, albeit without overt manifestations and/or affecting patients in significant numbers to be apparent to the national health care system, until recently.

Transmission of leishmaniasis

Information regarding the vector of leishmaniasis in Sri Lanka is limited. The presence of *Phlebotomus argentipes*, the established vector of the visceral form of leishmaniasis caused by *L. donovani* in the Indian subcontinent, has been well-documented in Sri Lanka²¹⁻²⁴. The studies carried out so far support the anthropophagic nature of the local vector^{23,24} and the environmental conditions that exist in most parts of the country favour outdoor breeding although some studies implies indoor breeding habits of this insect^{22,25}. The parasite is yet to be demonstrated within the insect vector and no detailed entomological studies have yet been carried out to elucidate vector behavioural habits, feeding preferences or insecticide susceptibility patterns, which are among the important aspects that would need to be considered in determining strategies for disease control.

The reason(s) for the sudden apparent increase in the number of cases within the island in the recent past remains speculative, though the ongoing civil war situation that affects the northern and eastern parts of the country may have had some influence. The war situation is likely had led the military personnel to move close to previously uninhabited areas by set-

ting up army camps close to jungles⁶, in addition to the movement of civilian populations away from conflict zones. The initial influx of cutaneous leishmaniasis cases from the north-central province of the country being inhabited predominantly by military personnel, supports the above view⁶. The free movement of affected individuals between conflict-free areas of the country with already existing vector populations may have subsequently led to the spread of this disease more widely within the country, while improved awareness among medical/paramedical personnel and the general public regarding this disease during the past few years may also had contributed to the increased number of referrals and apparent increase in the case load. The influence of urbanization, however, which is also a known risk factor for leishmaniasis in many parts of the world^{26,27}, on the occurrence and spread of leishmaniasis in Sri Lanka is yet to be ascertained.

Though it is generally believed that the only reservoirs of infection of *L. donovani* are infected humans, there are no published studies on possible reservoir hosts in the local setting. Hence, there are many questions regarding transmission aspects of this disease that still remain largely unanswered.

Control of leishmaniasis

There are no organized efforts in place for the control of this disease in Sri Lanka, although the case numbers have increased over the years and the cases have been reported from almost all provinces of the country⁶⁻⁸. Since notification of leishmaniasis cases to the central disease monitoring unit of the country was not a mandatory requirement within the national health sector, until very recently, active case detection has not been carried out even within the identified foci; the true burden of this disease is not known and is likely to be much higher than the figures documented so far.

Discussion

The trend so far observed favour the likelihood of the cutaneous form of the disease spreading further in

this country and more dangerously, of it mutating into a more virulent form with devastating consequences. A recent report of a fatal case of visceral leishmaniasis¹¹ and two other autochthonous visceral cases diagnosed during the year 2007 could be considered as further proof for the potential of the prevalent species to cause the much dreaded form of visceral disease. The situation calls for urgent action on the part of health authorities to put in place a surveillance system to monitor cases, at least in high risk areas, improve disease awareness among medical/paramedical personnel and general public and improve access for early diagnosis and treatment, which would minimize further spread. Furthermore, efforts should be directed towards implementation of an organized control strategy, combined with operational and epidemiological research to aid such control efforts. This would appear even more important in the light of the ongoing programme for 'the elimination of visceral leishmaniasis from the Indian sub-continent' that operates in neighbouring countries, namely India, Nepal and Bangladesh²⁸. Making use of that experience to plan and implement strategies that could be introduced locally might help to avert a potentially major catastrophe of leishmaniasis, particularly the visceral type becoming endemic in Sri Lanka and also would ensure better success in the regional drive towards elimination of this disease from the Indian subcontinent.

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