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### Letter to the Editor

## Experiences on Cutaneous Leishmaniasis Control in Imposed Iran-Iraq War 1980-1988

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### Dear Editor in Chief

About 12 million people are infected with leishmaniasis in 98 countries (1-2). Cutaneous leishmaniasis (CL) is distributed worldwide in particular in tropical and semi-tropical countries (3). It was well controlled during imposed war Iraq against Iran 1980-1988 by Iran Ministry of Health with collaboration of Iranian army and Islamic Revolutionary Guards corps and their health care providers (4-5).

Different health measures were taken in order to control the disease as follows:

#### **Health education**

For a disease such as CL, which does not have a vaccine for prevention and the rodent reservoir, is present and the vector (sand fly) is abundant 2 bites per minute in battle fields, it is difficult to fight the disease. Therefore na-

tional facilities such as radio and television board costing, health education instructors from the Ministry of Health throughout the country and armed forces health instructors throughout the war zone with direct training methods (face to face and holding training classes) and indirect methods of showing films, slides, distribution of pamphlets, installation of posters and placards, etc. were used.

#### **Vector control**

The fight against the disease was difficult, but the fight against the vectors, along with the fight against the malaria carrier mosquito (*Anopheles* spp.), has been done in various ways. Such measures have significantly reduced the carrier mosquito on the battlefield so reduced the incidence of the different insecticides such as (DDT, Malathion and



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Baygon (propoxur) for indoor residual spraying including resting places for soldiers using top standard sprayer pumps (Hudson) by trained workers for controlling the vector at least twice a year (March and September) against malaria, leishmaniasis and sand fly fever vectors during wartime. In spite of these achievements sometimes CL and different serotypes of sand fly fever especially Naples and Sicilian virus were present (6).

### *Rodents' control*

Rodents (different species), which are the reservoir of CL, were found in abundance in the front areas. With the knowledge we gained from holding a scientific seminar on rodents from a health aspects and their controls in the middle years of the war, we managed to prepare and implement a protocol to combat them. During that time, health training protocols were provided to combatants for personal hygiene and the environment, safe disposal of waste, improvement of trench environment, and using chemical as rodenticides such as zinc phosphide (ZN3P2) and kill rat compounds which had been effective in controlling of leishmaniasis.

### *Protective measures*

It was done by distribution of different insect repellents such as 'Sangar ointment' DEET lotion and similar compounds' as first line of defense against mosquitoes among combatants to reduce the bite rates by protecting their face and hands overnight. Ordinary bed net (not insecticides –treated bed net) was also used.

### *Leishmanization*

Leishmanization is not vaccination but in fact it is the practice of inoculation of live *Leishmania major* to induce mild CL in order to prevent the natural infection. Leishmanization was widely used by recommendations of Iran Ministry of Health in imposed war as only effective way to control in the endemic area of CL. Despite its complications (150/1,000000)

as non-healing scar, it was recommended wherever people were at very high risk of contracting the disease. Leishmanization had a protective effect of about 80% in the endemic areas (7). Leishmanization was not recommendable everywhere, but it was advisable for hyper endemic areas and also under conditions where the probability of becoming infected was extremely high, such as soldiers who live in fox-holes and trenches for many months in infected areas during the active season of sandflies. Its effective rate was around 86% for many cases whom were leishmanized during wartime (8). In addition, more than two million people were leishmanized by leishmanization technique and it could reduce the incidence of the disease between one-sixth and one-eighth of its original level (9). Finally, standard *Leishmania* suspension could produce lesion and provoke the CMI in the small-white mice. Besides, leishmanization was a valuable tool to protect against CL (10).

Indeed, the control of the reservoir hosts (rodents and domestic dogs) and the carriers *Phlebotominae* (*P. papatasi*, *P. sergenti*) were not feasible. On the other hand, the killed vaccine was not available to prevent leishmaniasis. However, cases of disease were observed on the battlefield, and therapeutic measures, mainly using 3 and 5 ammonium salts, were used. Of course, control measures against other vector borne diseases have also been effective in controlling CL. Research in this area needs to be continued more than ever, especially in the area of the killed anti-*Leishmania* major vaccines, so that, in the same circumstances as the last war, it is possible to prevent possible epidemics of leishmaniasis CL.

I am grateful to all those who helped us in the prevention and control of leishmaniasis illness CL in the imposed war including the Iranian Ministry of Health, the academic staffs of School of Public Health, Tehran University of Medical Sciences, in particular; late Dr. Javadian Dr. Nadim Dr. Msadaghinia, Dr. Amini, Dr. Mohabali, Dr. Mahvi, Dr. Mo-

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### **Conflict of interest**

The author declares that there is no conflict of interests.

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