

Report

Visceral leishmaniasis control in Thi Qar Governorate, Iraq, 2003

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مكافحة داء الليشمانيا الحشوي في محافظة ذي قار العراقية، 2003

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الخلاصة: بداية من عام 1991، أخذ داء الليشمانيا الحشوي يمتد إلى مناطق جديدة في العراق نادراً ما تفتش فيها من قبل، مثل المحافظات الجنوبية. وفي عام 2003، وفي أعقاب الغزو الذي قامت به قوات التحالف على العراق، تعرّضت محافظة ذي قار بشدة لمخاطر فاشية من داء الليشمانيا الحشوي. وتتناول هذه الورقة بالوصف التعاون بين منظمة دولية غير حكومية وبين إدارة للرعاية الصحية الأولية في منطقة صحية، من أجل تجديد وتعزيز برنامج مكافحة داء الليشمانيا الحشوي في محافظة ذي قار في عام 2003، واتقاء وقوع فاشية كبرى من الليشمانيا الحشوي. كما تناقش هذه الورقة البحثية الدروس المستفادة من هذه التجربة، وتقدم توصيات من أجل المستقبل.

ABSTRACT Since 1991, visceral leishmaniasis has extended to new areas rarely affected before in Iraq, such as the southern governorates. In 2003, in the aftermath of the invasion of the Coalition Forces, Thi Qar Governorate was at high risk for an outbreak of visceral leishmaniasis. This paper describes the cooperation of an international nongovernmental organization and a district primary health care department to restore the visceral leishmaniasis control programme in Thi Qar in 2003 and prevent a major outbreak of visceral leishmaniasis. It also discusses the lessons learned and presents recommendations for the future.

La lutte contre la leishmaniose viscérale dans le Gouvernorat de Thi Qar (Iraq), 2003

RÉSUMÉ Depuis 1991, la leishmaniose viscérale s'est étendue à de nouvelles zones rarement touchées auparavant en Iraq, telles que les gouvernorats du Sud. En 2003, après l'invasion des forces de la coalition, le Gouvernorat de Thi Qar présentait un risque élevé de flambée de leishmaniose viscérale. Cet article décrit la coopération d'une organisation non gouvernementale internationale et d'une administration de soins de santé primaires de district afin de rétablir le programme de lutte contre la leishmaniose viscérale à Thi Qar en 2003 et d'éviter une importante flambée de leishmaniose viscérale. Il examine également les enseignements tirés et présente des recommandations pour l'avenir.

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Introduction

Although there are no available data on any recent epidemic outbreak of visceral leishmaniasis (VL) in Iraq, the disease is a public health threat in Iraq, especially following the Gulf War in 1990–91 and United Nations sanctions against Iraq that followed. According to the World Health Organization (WHO) [1], over 3000 cases per year were reported in Iraq following the War. The most important endemic areas before 1991 were central Iraq and the greater Baghdad area [1]. However, with the drainage of marshes in southern Iraq in 1996 and redistribution of water sources in Iraq, the majority of cases occur now in southern Iraq and the distribution of the disease has shifted south and across the country [1]. The public health situation in Iraq further deteriorated after the invasion by Coalition Forces in March/April 2003.

It was clear that a major outbreak of VL was possible in 2003. To prevent this and to restore the VL control programme in Thi Qar Governorate of Iraq, a joint effort was made in 2003 by an international nongovernmental organization (International Medical Corps) and a local district primary health care department. This paper describes the programme and discusses the lessons learned and recommendations for the future.

Situation in Thi Qar before 2003

Thi Qar is one of 4 southernmost governorates or provinces in Iraq. It has an area of 12 900 km² and a population of 1 458 500 people [2]. It has 5 smaller administrative districts: Nassiriyah, Shatra, Rifei, Chebayetsh and Souk Shouk.

VL in Thi Qar is usually diagnosed by clinical examination and the diagnosis is later confirmed by the demonstration of

parasites in bone marrow aspirates or by immunofluorescent assay serological tests [3,4]. The disease typically affects children under 5 years of age [5]. In 2003 15.5% of Thi Qar's population (226 000 people) were children under 5 years old [3], the age group at highest risk.

In 2002, the health directorate in Nassiriyah district reported a total of 840 cases of VL in Thi Qar Governorate, the great majority of them in children under 5 years old [3,6]. The incidence of VL in Iraq as a whole was 10.9 per 100 000 in year 2001 while the incidence of VL in Thi Qar was more than 5 times higher at 55.5 per 100 000 for 2002 [1,3,6]. There are no recent data on mortality from VL, as deaths from VL occur mostly at home in Thi Qar and they are usually not registered as VL deaths.

Many factors that could explain the shift of VL to the south and across Iraq in recent years were also present in Thi Qar in 2003. These include: deterioration of the health status of children below 5 years, i.e. malnutrition, immunodeficiencies and co-infections; population movements from rural to urban settings which brought non-immune populations into transmission areas; increased density of sandfly vectors due to increased number of breeding sites generated by the destruction of water and sanitation systems, and shortage of proper insecticides, spraying and fogging machines and other supplies and equipment; inefficient sewage treatment and disposal systems; accumulation of garbage in urban settings; and increase in the canidae population especially dogs. Drought, migration of the population to larger cities, malnutrition, minimal infrastructure and sanitation and increase in the canidae population are all well-known factors favouring large outbreaks of VL elsewhere in the world, e.g. in Brazil [7].

Additionally, after the Coalition Forces invasion in March/April 2003, both the surveillance systems for communicable diseases in Thi Qar and the supply of pentavalent antimonial drugs (sodium stibogluconate), the first-line treatment for VL [6], were disrupted due to looting of health facilities and lack of motivation and resources for health workers.

Visceral leishmaniasis control plan, 2003

Before the recent conflicts, the VL control plan in Thi Qar followed the Iraqi national plan: entomological investigations in affected areas; indoor residual insecticide spraying for 40 days twice annually (May and September) to interrupt transmission of the parasite; night fogging activities; reservoir control measures (e.g. culling of stray dogs); and early diagnosis of cases and complete management and treatment of VL cases [3,6,8–10].

The VL control strategy for 2003 was a joint programme by International Medical Corps and the Primary Health Care Department of Nassiriyah District. The plan, which aimed to be integrated, feasible and efficient, included:

- entomological investigations in affected areas;
- residual insecticide spraying;
- distribution of bednets to high-risk areas for VL;
- a comprehensive community health education campaign to create community awareness about VL; and
- lectures on diagnosis and treatment of VL for primary health care personnel.

Entomological investigation

An entomological investigation by the United States Army Medical Corps in summer

2003 found that the rate of sandflies infected with *Leishmania* spp. in Nassiriyah district of Thi Qar (1:50) was 200 times higher than the usual rate in Nassiriyah (1:10 000). The findings were reported at a WHO meeting in Basra in July 2003 [13].

Residual insecticide spraying

Two indoor sprayings for VL in Nassiriyah and Shatra districts of Thi Qar Governorate in May and October 2003 were supported by International Medical Corps and delivered by the Unit for Communicable Diseases, Nassiriyah Primary Health Care Department. Both sprayings lasted for 40 days.

Distribution of bednets

Bednets treated with the insecticide permethrin were distributed to households in those villages in Thi Qar which had been at highest risk for VL during previous years (according to information from the Unit for Communicable Diseases at Nassiriyah Primary Health Care Department). The distribution was organized through the Thi Qar primary health care system [3].

Community health education campaign

A comprehensive health education campaign to create community awareness and improve early diagnosis of VL was organized and implemented through close collaboration of International Medical Corps and the Primary Health Care Department in Nassiriyah. All health messages were approved by Nassiriyah Health Directorate, a regional equivalent to the Ministry of Health in Baghdad.

Print and broadcast media were used in a campaign that lasted for 5 months. Public health messages on local TV and leaflets were designed by experienced local public health and primary health care pro-

professionals. The health education campaign was broadcast on Nassiriyah TV station at peak viewing times (between 21.00 and 23.00) each day for 3 months, and 1 and 3 minute health messages ran interchangeably. Printed health education leaflets were created, copied and later distributed to all main health units, i.e. 6 hospitals and 36 main primary health care units in all 5 Thi Qar districts. Information on VL was delivered in the health education departments in primary health care units (called "health education corners"), which are the area where staff (usually nurses) conduct education sessions. A lecture on VL was also delivered by a local health educator to schools in Nassiriyah town, which was one of the areas of highest risk for VL in Thi Qar Governorate.

Health education messages advised people to stay in well-screened or air-conditioned areas as much as possible, to avoid outdoor activities, especially from dusk to dawn when sandflies are the most active, to wear long-sleeved shirts, long pants, and socks when outside, to apply insect repellent on uncovered skin and under the ends of sleeves and pant legs, to spray clothing with permethrin-containing insecticides, to spray living and sleeping areas with an insecticide to kill insects and to use insecticide treated bednets if not sleeping in an area that is well screened or air-conditioned. The health messages also contained information on how to recognize early symptoms of disease and where to go for help.

According to feedback received from beneficiaries, health education messages were culturally appropriate, easy to understand and acceptable to various categories of the Thi Qar population.

Lectures for primary health care personnel

The topic of VL was covered in a 6-month training for Thi Qar primary health care

professionals, delivered as a joint effort by International Medical Corps and the Nassiriyah Primary Health Care Department. This training emphasized early diagnosis and complete treatment of VL cases.

Treatment supplies

In addition, to restore availability of treatment, supplies of the drug sodium stibogluconate were delivered to Thi Qar Governorate by the Iraqi major whole drug supplier, Kimadia.

Outcomes

Residual insecticide spraying

A total of 1751 houses in 27 villages at highest risk for VL in Thi Qar were reached by indoor spraying in May and October 2003 (26 in Shatra and 1 in Nassiriyah), covering a total area of 826.9 m² (815.0 m² in Shatra and 11.0 m² in Nassiriyah).

Distribution of bednets

In 87 villages, 20 primary health care centres were involved in the distribution of bednets. Overall 6000 bednets were distributed to families with children under 5 years in areas of highest risk (100 in Nassiriyah, 2600 in Al-Shatra, 800 in Rifei, 1600 in Souk Shouk and 900 in Chebayetsh).

Community health education campaign

According to information from Nassiriyah TV, 700 000 people in 4 Thi Qar districts (Nassiriyah, Chebayetsh, Souk Shouk and Shatra) had access to public health information on VL through the medium of local TV (this is an estimate of the number of people who had TVs in their homes in these 4 districts in 2003). Rifei district had a separate TV station and it was therefore not covered by the TV health education campaign.

Printed health education material on VL was created and distributed to 22 schools in Nassiriyah town, all 36 main primary health care units and all 6 hospitals in Thi Qar Governorate. A local health educator gave lectures on VL at 22 schools in Nassiriyah, one of the areas of highest risk for leishmaniasis in Thi Qar.

We estimate that at least 80% of the Thi Qar population had access to some kind of information on VL, either through print or broadcast media or through direct health education in primary health care units.

Lectures for primary health care personnel

The health educator visited all primary health centres in Nassiriyah and gave lectures on VL to their health education staff. Lectures on VL were delivered to 394 primary health care professionals (64 doctors, 175 assistant doctors and 155 nurses) in all 5 Thi Qar districts (36 in Nassiriyah, 60 in Shatra, 49 in Chebayetsh, 102 in Souk Shouk and 47 in Rifei).

VL incidence data before and after the campaign

Data on incidence of VL in Thi Qar in 2003 were collected by the Unit for Communicable Diseases, Nassiriyah Primary Health

Care Department (Table 1). Compared to an average number of cases of VL in Thi Qar for a period 1999–2002, there was an increase in the number of cases of VL in Thi Qar for all months in 2003, except for March and May (Table 2). The greatest increases in the number of cases was in July (+288%) and November 2003 (+286%). Altogether, there were 52% more cases of VL in 2003 than the average from 1999–2002 (Table 2).

The success of the campaign is demonstrated by the data in Table 3, showing a 55% decrease in the number of cases of VL in January and February 2004 compared with January and February 2003. If we compare the total number of cases of VL in Thi Qar in 2003 (877 cases) with the total number in year 2002 (840 cases), we can see that there were only 37 more cases in year 2003 a 4.4% increase.

Discussion

This report is the first to describe the incidence of VL in Thi Qar Governorate and the VL control programme in one Iraqi Governorate after the invasion of the Coalition Forces in March/April 2003.

Table 1 Distribution of cases of visceral leishmaniasis in Thi Qar in 2003 by month and district

District	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Nassiriyah	25	30	_ ^a	20	10	22	29	12	19	13	14	11	205
Shatra	68	53	10	15	8	23	25	18	13	17	25	47	322
Rifei	15	10	6	10	10	2	10	5	3	11	10	19	111
Souk Shouk	22	7	2	5	10	2	4	6	8	7	12	5	90
Chebayetsh	20	16	3	7	9	12	25	15	12	8	8	14	149
Total	150	116	21	57	47	61	93	56	55	56	69	96	877

^aNo data available.

Source: Unit for Communicable Diseases, Primary Health Care Department in Nassiriyah, Thi Qar Governorate, Iraq

Table 2 Comparison of number of cases of visceral leishmaniasis in Thi Qar in year 2003 with average number of cases in Thi Qar by month during 3-year period (1999–2002)

Month	Mean no. of cases over 1999–2002	No. of cases in 2003	% change between 2003 and 1999–2002
January	66.3	150	+126
February	84.3	116	+38
March	68.8	21	–69
April	42.3	57	+35
May	60.0	47	–22
June	50.0	61	+22
July	24.0	93	+288
August	36.8	56	+52
September	32.0	55	+72
October	27.3	56	+105
November	17.5	69	+294
December	64.0	96	+50
Total	573.3	877	+52

Source: Unit for Communicable Diseases, Primary Health Care Department, Nassiriyah, Thi Qar Governorate, Iraq.

The high incidence of VL in Thi Qar in 2003 may be the result of interruption of previously applied methods of control, e.g.

Table 3 Comparison of number of cases of visceral leishmaniasis in Thi Qar in January and February 2003 with number of cases in Thi Qar in January and February 2004

Month	No. of cases in 2003	No. of cases in 2004	% change between 2004 and 2003
January	150	66	–56
February	116	55	–53
Total	266	121	–55

Source: Unit for Communicable Diseases, Primary Health Care Department, Nasariyah, Thi Qar Governorate, Iraq.

insecticide spraying or early diagnosis and treatment of positive cases. It may also be a result of lack of proper diagnostic skills/methods and drugs for treatment of VL during previous years. It is therefore possible that some cases of VL detected in year 2003 were accumulated cases of the previous year's transmission. The incubation period for VL is generally 2–6 months but it ranges from 10 days up to several years [8]. Additionally, all risk factors favourable for an outbreak of VL—such as inefficient sewage treatment and disposal systems, accumulation of garbage in urban settings, increase in the dog population and increased density of sandfly vectors due to increased number of breeding sites generated by the destruction of water and sanitation systems—were present in Thi Qar in 2003 after the Coalition Forces invasion.

There are several important lessons learnt from this project and there are also several recommendations for future programmes in Iraq.

Lessons learned

- It was possible to launch a successful and comprehensive health education campaign in Iraq almost immediately after the Coalition Forces invasion (at least in Thi Qar Governorate). The success of a health education campaign was very important for prevention of an outbreak of VL. Passive detection of VL cases is of the utmost importance for a VL control programme which depends largely on the awareness of the public about the early symptoms of VL [10]. Health education of the population in endemic foci is the most important element of the control strategy [10].
- The success of our health education campaign depended on many factors such as good local health educators and

their motivation to deliver proper health education messages, cooperation of the health system and local media and coordination of health education activities with the local health system. Elfituri et al. [11] found that television was acknowledged as the most effective health education medium for raising health knowledge of the general population. Therefore, our comprehensive health education campaign placed an emphasis on educational TV.

- Primary health care professionals in Iraq could benefit more from up-to-date information on diagnostics and treatment of VL. Our training of primary health care professionals in Thi Qar was continuously monitored and evaluated and it included appropriate and different teaching methods, e.g. role plays, case studies, etc. Abdel-Naser et al. [12] found that the effectiveness of any training programme depends on its continuous monitoring and evaluation, and the training should include appropriate and different teaching methodology.
- Despite the poor state of infrastructure and services in Iraq, the local health system and local health professionals in Thi Qar were capable of running the VL control programme, especially when adequately supported by international organizations.

Constraints

Some of the most important constraints encountered were:

- Indoor spraying for VL started too late, in October instead of September 2003, mostly because of security concerns and temporary lack of funding. It was also limited only to areas at highest risk for VL (according to information

from the Unit for Communicable Diseases, Primary Health Care Department, Nassiriyah) [3]. Spraying houses with insecticide is the most widely used intervention for controlling sandflies that rest mostly indoors after feeding [13].

- Not all the targeted population in Thi Qar received the health education messages broadcast on local terrestrial TV. After the 2003 Coalition Forces invasion, many people in Iraq bought satellite dishes (which had been forbidden under the previous government) and some popular satellite programmes were on the air at the same time when the local TV education spot on VL was transmitted. Furthermore, the health education campaign would probably have been even more effective if it had been done continuously throughout the whole of year 2003 and in previous years as well.
- The health education areas within primary health centres in Thi Qar were not always able to deliver proper health education messages due to overload of patients. According to Elfituri et al. [11], lack of time was highlighted by 76% of doctors as a barrier to providing more health advice for their patients.
- There was a lack of feedback on whether insecticide-treated bednets distributed through Thi Qar primary health care system reached the final beneficiaries, i.e. families with children under 5 years old in areas of Thi Qar at highest risk for VL [14]. Although it is unclear whether insecticide-treated bednets substantially reduce the incidence of VL, they definitively provide considerable protection and they are no less effective than indoor spraying in reducing the risk of VL [13].

Conclusions

Although most of the risk factors for an outbreak of VL were present in Thi Qar after the invasion of the Coalition Forces in 2003, a major outbreak of the disease was prevented. The VL control programme in Thi Qar was restored through a combination of: entomological investigation in affected areas; indoor spraying campaign; distribution of insecticide-treated bednets; comprehensive health education campaign;

and training of primary health care professionals on early diagnosis and complete treatment of VL cases.

Overall the project was successful, although it could probably have been better if bednets had been distributed before the end of warm period of the year (end of the biting season for the sandfly). Also, indoor spraying did not start on time in September 2003 and it was limited only to areas at highest risk for VL.

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