

Opinion

Volume 3 Issue 2 - September 2017
DOI: 10.19080/IJCSMB.2017.03.555609

Int J cell Sci & mol biol

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Leishmaniasis in Syria



Al-Nahhas S¹ and Altawil A²

¹Department of Animal Biology, Faculty of Science, Damascus University, Damascus, Syria

²National Leishmaniasis Control Program, Ministry of Health, Damascus, Syria

Submission: August 23, 2017; **Published:** September 22, 2017

***Corresponding author:** Al-Nahhas S, Department of Animal Biology, Faculty of Science, Damascus University, Damascus, Syria,
Email: samar.nahhas@yahoo.com

Opinion

Leishmaniasis is still considered a main health problem in Syria. Three epidemiological forms are known in this country: ACL (*L. tropica*), ZCL (*L. major*) and VL (*L. infantum*) which spread according to the geographical nature of the place (the altitude); the species of the vectors (sandflies) [1], the animal reservoirs and many other environmental factors. Table 1 presents the parasite species, the vector species, the animal reservoirs and the transmission way. These make the control of this disease difficult and more complicated beside to many other

problems related to different issues like: population growth and movement, the health system, intersect oral co operation, the weakness of national research institutions. etc. Most of the reported cases from rural areas around the capital Damascus, the costal western region (Latakia and Tartous), the middle region (Homs, Hama and Idlib) and the eastern region (Al , Hasakeh and DeirEz-Zour) of the country, are cutaneous (ACL and ZCL). However, in the eastern and southern regions dozens of visceral cases are reported every year.

Table 1: Different species of *Leishmania*, vectors and animal reservoirs

| | ACL (Urban Form) | ZCL (Rural Form) | ZVL |
|--------------|--|---|--|
| Parasite | <i>L. tropica</i> MON 76 [2], New research; ROM 94-95-103-104-105 | <i>L. major</i> Mon 26 [11,13] | <i>L. infantum</i> Mon 1 [13], New research; Rom 1 |
| Vector | Ph. Sergenti [18,6] | Ph. Papatasi [19] | Ph. Tobbi [4,17] |
| Reservoir | Human | <i>Psammomys obesus</i> [16] Merions- Nesokia indice | Stray dogs [10] |
| Transmission | Person-sandfly-person | rodent-sandfly-person | Dog-sandfly-person |
| Governorates | Central, north and coastal areas: Aleppo, Idlib, AlHasakeh, Hama, Homs, Latakia, Tartous, rural Damascus | Semi-arid areas: Alhassakeh, Dei Ezzour, Homs, rural Damascus | Latakia, Idlib, Aleppo, Tartous, Daraa |

During the 10 year period (2005-2015), the number of cutaneous leishmaniasis cases reported by the Department of disease control (Table 2), while the number of visceral leishmaniasis was 211 cases between 2006 and 2016. People with cutaneous leishmaniasis have one or several long-lasting lesions on the skin, usually without fever or general symptoms. Cutaneous leishmaniasis caused by *L. major* (known as rural

zoonotic cutaneous leishmaniasis). The lesions are often severely inflamed and ulcerated and heal within 2-8 months. The incubation period is often less than 4 months. While, Cutaneous leishmaniasis caused by *L. tropica* (known urban anthroponotic cutaneous leishmaniasis) produces painless, frequently multiple, dry ulcers of the skin, which usually heal spontaneously within about one year. The incubation period is usually 2-8 months.

Table 2: Number of Reported CL cases between 2005 and 2015 According to Provinces.

| Governorates | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Damascus | 852 | 435 | 444 | 766 | 1581 | 1471 | 1320 | 879 | 1026 | 1186 | 772 |
| Rural of Damascus | 1064 | 441 | 351 | 661 | 1007 | 823 | 1123 | 1728 | 2157 | 2542 | 3583 |
| Dara'a | 35 | 54 | 56 | 67 | 133 | 100 | 77 | 53 | 19 | 7 | 11 |
| Qunaitra | 30 | 18 | 11 | 3 | 69 | 141 | 14 | 0 | 0 | 2 | 0 |
| Swaida | 9 | 9 | 28 | 32 | 95 | 57 | 72 | 82 | 85 | 65 | 30 |
| Homs | 215 | 181 | 261 | 455 | 592 | 321 | 201 | 545 | 1489 | 866 | 868 |
| Hama | 1695 | 1875 | 2302 | 3883 | 5512 | 3732 | 4121 | 3906 | 7616 | 5719 | 8874 |
| Idleb | 2231 | 2168 | 1842 | 2219 | 4894 | 4416 | 5324 | 3820 | 12327 | 12699 | 7603 |
| Aleppo | 11025 | 10714 | 10295 | 18603 | 29403 | 23780 | 27712 | 22088 | 22365 | 11787 | 6218 |
| Lattakia | 1739 | 1220 | 876 | 849 | 862 | 538 | 510 | 598 | 2467 | 1385 | 475 |
| Tartous | 1932 | 1031 | 732 | 676 | 572 | 491 | 641 | 735 | 2832 | 1997 | 1085 |
| Raqqa | 57 | 48 | 98 | 186 | 384 | 212 | 415 | 1566 | 1272 | 959 | 427 |
| DeirEzoor | 192 | 249 | 179 | 346 | 579 | 1364 | 4635 | 5277 | 10817 | 2587 | 552 |
| Hasakeh | 875 | 289 | 234 | 394 | 665 | 4727 | 11991 | 14617 | 7524 | 12075 | 20474 |
| Total | 21951 | 18732 | 17709 | 29140 | 46348 | 42173 | 58156 | 55894 | 71996 | 53876 | 50972 |

In light of the crisis our country faces, there is a big demographic change due to:

- i. The migration of people from their permanent residency areas and staying in evacuation shelters, poor housing.
- ii. The introduction of non-immune people into areas with existing endemic or enzootic transmission cycles.
- iii. The large number of people found into a small space may attract sand flies
- iv. The deficient medical facilities
- v. The high density of rodents in some areas.
- vi. The per-domestic sanitary conditions (e.g. lack of waste management, open sewerage).
- vii. The climate changes (rainfall, atmospheric temperature and humidity)

All of these changes increase the incidence of the leishmaniasis, or affect the transmission of the disease.

Depending on the Ministry of Health reports, a high number of ACL cases, was recorded in safe governorates (Latakia and Tartous). During the period (2011-2015), the number of cutaneous leishmaniasis cases was:

- 1) Latakia: 510, 589, 2457, 1385 and 475 respectively
- 2) Tartous: 641, 735, 2832, 1997 and 1085 respectively.

While the number of CL cases (mostly ZCL) at Alhasaka governorate Increased dramatically from 4727 cases in 2010 to 20474 cases in 2015.

The diagnosis and treatment centers were established in each province of Syria. The original techniques for demonstrating amastigotes in smears of bone marrow and skin lesions for diagnosis are still reference methods. Although, the detection of parasite DNA by PCR in blood or bone marrow aspirates is substantially more sensitive than microscopic examination [2-4].

Two serological tests, the direct agglutination test and the rK39 antigen-based immuno-chromatographic test were specifically developed for field use and have shown good diagnostic accuracy in most endemic areas [5-9]. The rK₃₉-based test is easy to perform, fast, cheap and give reproducible results and can therefore be used for early diagnosis of visceral leishmaniasis (especially in hot spot areas). A standard treatment regimen was started for patients with parasitological proven either Local or systemic treatments (Antimonials) or physical treatment (Thermotherapy 50 °C, Cryotherapy -196 °C). The cost of treatment and implementation of prevention strategies needs a high financial and human resource investment [10-19].

The control activities are:

- a) Early active and passive case detection
- b) Laboratory Diagnosis & Treatment
- c) Health education and community participation.
- d) Establishment vector control activities (two insecticides spray campaigns), and animal reservoir control activities (in zoonotic foci).
- e) Cooperation and coordination with other concerned sections and authorities.
- f) Environmental corrections and managements.

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DOI: [10.19080/IJCSMB.2017.03.555609](https://doi.org/10.19080/IJCSMB.2017.03.555609)

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