

The intra-uterine transmission of *Leishmania major* in BALB/c mice.

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Abstract:

The result of the present study showed that the transmission of *Leishmania major* from infected mated mice to their babies takes place through the intra-uterine methods. The clinical manifestations of the infected mice includes , skin lesion erythema and nodules with redness .

Key words: *Leishmania major* , transmission, congenital infection, contagious infection.

Introduction

Leishmania are protozoan parasites that belong to the family trypanosomatidae genus *Leishmania* (1). About 22 *Leishmania* spp. are known to be pathogenic for human (2), and its infections were transmitted naturally by the bite of infected female of the sand fly (3). Cutaneous leishmaniasis (CL) is an endemic disease in Iraq particularly in Baghdad. Both species *L.tropica* and *L.major* have been reported from different parts of the country (4). CL causes skin lesions which are usually self-healing in about six months, leaving serious disfiguring scars (5). In her experimental study (6) found that the *L.major* can produce a pattern of evaluation of metastatic disease in visceral organs and distant cutaneous sites in experimentally infected BALB/c mice. Transmission of *L.major* from infected mothers to their offspring was documented in mice (7). The aim of the present study is to demonstrate the transmission of *L.major* infection from infected mating partners to their offspring.

Materials and methods

The strain of cutaneous leishmaniasis, which is used in the present study was clinically identified as *Leishmania major*. This strain was isolated from female patient a 35 years old consulting by a dermatologists clinic. A spirate material from margin of ulcer was spread on a cleaned slide. The prepared smear was stained with leishman's stain, amastigote was seen under the light microscope. The *Leishmania* strain was isolated on diphasic (NNN) medium. Promastigotes were cultivated in diphasic media at (26°-28)°C then harvested on the 6th day either for animals infection or for sub-culturing in new media. BALB/c mice (8-10) weeks old were inoculated at the hind footpad and at a shaved area above the tail with $1 \times 10^7 / 0.1 \text{ml}$ of promastigotes (8). The mice were divided into 7 groups 8 weeks post infection with *L.major* promastigote when the size of ulcerative lesions ranged between (5x5 to 7x10)mm diameter (Table 1). Amastigotes were documented in smear preparation and culture. The contact mice were kept in cages until the time of delivery, there after the babies were kept together with their mothers for 3 weeks then the baby of first generation (F1) was transferred to separate new cages. The appearance of the skin mice manifestations such as swelling, redness, erythema, open skin ulcer . ulcerative lesions was monitored at weekly intervals. Examination either by impression smear preparation or by culture was done.

Results & Discussion`

The results of the present study showed that the direct contact between mice are able to transmit the infection to the young baby. Only 3 groups out of 7 mice mated groups show transmission of infection either from infected male and female to baby, or from infected female only. Infected male only did not give any infection among babies , (Table 1).

The clinical manifestations of the infected mice includes, open skin lesions, erythema and nodule with redness.

Table 1: The infection of different experimental groups of BALB/c mice with *L.major*.

Exp. Groups	No. of mice contact (mates)	No. of baby (F1)	No. of infected mice from (F1) 6-8 weeks after transfer from mothers
1	5 infected female x 2 non-infected male	3F + 1M	1F open skin lesions on footpad
2	5 infected female x 2 non-infected male	2F + 3M	1F footpad thickness and erythema
3	5 infected female x 2 non-infected male	4F + 2M	No infection
4	5 infected female x 2 -infected male	3F + 4M	1F nodule on footpad with redness
5	5 infected female x 2 -infected male	5F + 3M	No infection
6	5 non infected female x 2 non-infected male	3F + 2M	No infection
7	5 non infected female x 2 infected male	3F + 6M	No infection

* F1: First generation
F: Female
M: Male

The results of the present study show that the intra-uterine transmission of the parasite from mother which is injected with *Leishmania major* promastigote is by the subcutaneously route to their baby (F1) is possible (7). On the other hand, the transmission of *Leishmania major* from infected mated mice presumably takes place through direct contact. (9) show that the transmission of *L.mexicana* to healthy cagemates could be due to the direct contact of crowded animals with open skin sores. This study provides evidence that the healthy animal colony does not avoid sick ones (10).

The susceptibility of BALB/c mice to infection with *L.major* gives a good evidence of using this animal as a model for further experiments.

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الانتقال المشيمي لداء اللشمانيا الجلدي المتسبب عن سلالة *Leishmania major* في

الفئران المختبرية. BALB/c mice

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الخلاصة

أظهرت نتائج الدراسة الحالية انتقال داء اللشمانيا الجلدي المتسبب عن سلالة *Leishmania major* من أزواج الفئران المختبرية المصابة الى الفئران الرضع خلال الانتقال المشيمي . أظهرت الفئران المصابة مظاهر مرضيه منها افات جلديه متفرجه , وعقد جلديه مع احمرار .