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Epidemiological and histological study of cutaneous leishmaniasis in humans in Al-Najaf Al-Ashraf governorate

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Abstract--The current study, which was conducted during the period from 1 | 10 | 2020 to 30 | 12 | 2021 Examination of 318 people arriving at Al-Sadr Teaching Hospital, Al-Hakim Hospital, Al-Manathera General Hospital, Al-Haidariya General Hospital and some health centres in the governorate. A comparison has been made between the rates of cutaneous leishmaniasis infection in the centre of the governorate and some districts and the northern and southern regions affiliated to it, based on the information on the form of the people from whom the study samples were taken. The results of the current study showed that the number of patients with cutaneous leishmaniasis reached 65 cases at a rate of (100 %) and that 253 injuries at a rate of (100%) were for other skin diseases. The highest injuries were recorded in males (46) with a rate of (70.8%) and the lowest in females with and at a rate of (29.2%). The highest injuries were in the age group (20-11) years (22) with a rate of (33.8), and the lowest injuries were in the category (70-61) years has one inhavey, at a rate of (1.5%). Rurall areas recorded the highest number of infections, which amounted to (35) cases, at a rate of (53.9%), and the least in urban areas was (30) injuries, at a rate of (46.1 %). 89.2) Te least number of injuries in the areas where the carrier is least present is (7) injuries, with a rate of (10.8% Accordingo the to number and location of ulcers in the body of the injured, the face area was recorded with the number of injuries (32) infected, the highest percentage (49.2%) and the lowest area was in the lower extremities (20%) When cocomparinghe type of ulcer, the wet ulcer recorded the highest number of infections (42) with a rate of (64.6 %), compared with the dry ulcer, the lowest number of infections was (23) injury

awitwithte of (35.4%). As for shape of the ulcer, the current study recorded the ulcer as a node, the highest was (33) ulcers with a rate of (58.8%) , and hethetudthealso showed that the month of January recorded the highest number of infections (18) with a rate of (27.8%), while June, August, and April recorded the least number of injuries (1), at a rate of (1.5%). The results of the current study showed the importance of histological examinations as a method for diagnosing the parasite from the skin biopsy of (7) patients with cutaneous leishmaniasis whihinwhich inidicated can'tchanges in the skin such as necrosis of the epidermis and an increase in its thickness with the infiltration of lymphocytes with the occurrence of vasodilatation in other areas.

Keywords--epidemiological, histological, cutaneous leishmaniasis in humans.

Introduction

Leishmaniasis is _ A parasitic and epidemic disease that is widespread worldwide, caused by parasitic protozoa (protozoa), and according to the reports of the World Health Organization (WHO) it ontituconstitutesr health problem for humans, especially in poor developing countries, where it spreads in more than 88 countries, and 350 million people are exposed to the disease, and some countries constitute The Middle East is a major focus of the disease, such as Pakistan, Afghanistan, Iran, Saudi Arabia and Iraq Fagundes (Silva GA, 2012)).

Cutaneous leishmaniasis is called Oriental sore, ndtand thehereveral names according to the area in which the infection is spread, such as Baghdad boi , Kanaharboil or Delhi boil . The wo tpestypesible for cutaneous leishmaniasis are Leishmania . ropic andcand call ancallednd leishmania Leishmania Majore It is called large, which may differ in some signs from the tropics, and there are other types of leishmaniasis , hich may cinicaclinicallyap with some symptoms, such as mucocutaneous or visceral leishmaniasis . Vsceral) (arzinRezin4) . The infected female Phlebotomus sand fly injects the promastigote phase that is present in the intestine of this insect by biting the healthy host during the process of feeding on its blood .)))

The infetiinfectiontributed in the form of ulcers in different places of the victim's body, depending on the location of the bite, the sensitivity of the patient and his immune defendencesit isdefenceshead, upper and lower extremities, or others. Hanniffy S,2011). The ulcers are small and then develop into nodules. Several studies have indicated that histological changes are not constant in the case of cutaneous leishmaniasis, ev inevene twoclAwolowoelycloselygically . L. Majr and troictroika. (FaTropicashizi,2020). Cutaneous leishmaniasis is prevalent in Iraq until the end of the fiftieth era, which is caused by a parasite L.tropica and L.major , an it ws kandwn n the past as Baghdad boil or oriental sore . Infctios ilnfectionsincrease increasedregions of Iraq, while the southern regions were almost empty, especially the marshes region (Galati, 201) as recordererecords recordedthe institutemic Diseases in Iraq . dseases Institute i thelyear (1950,

1949) many infections in the governorates of Baghdad, Mosul, Kut and Dhi Qar (Sarhan, 195). zoonotic leishmaniasis spread in the eighties and reached (1566) and (2500) infections in 1983 and 1984, respectively, while in the last century, the highest infection number of two were reached in number of (12645), which were close to those in 1991 (11946) injuries and 1993 (11155) injuries, the lowest in 1995 (2470) injuries (Flegontov P, 2013).

And in Babylon it is clear Ghorbel, (2016) showed that rural areas have the wet type prevalent in contrast to urban areas where the dry type is prevalent. He mentioned that 15-year-olds recorded an infection rate of 63.3%. pointed out Al-Mashhadani (2003) to (1546) injuries in Baghdad in 2001 in a study of leishmaniasis and its vectors and the emergence of infection in the month of November and December, while Al-Tawfeil (2003) showed that 106 injuries were in the year (2003 and 2002) in Najaf governorate, and the prevalence of the disease is in January and February. Geraldo, (2016) indicated through his study of leishmaniasis that it is not possible to know the type of causative agent of cutaneous or visceral leishmaniasis through the pathological symptoms and clinical signs because they are overlapping. The statistics of the Walter Reed Army Medical Center indicated the two years (2003 and 2002), the rate of infection of American soldiers in the Middle East was 22 cases in Iraq, especially in the provinces of Baghdad and Dhi Qar (Hamzeloo-Moghadam, 2015). infected with the parasite *L. Major* (Franco, 2019), as indicated by Omes RF, (2012), 150 cases of American soldiers diagnosed in Iraq during 2003

Leishmaniasis is prevalent in rural areas, and its adaptation in urban areas increased its spread there, which were not previously infested, and deforestation, natural disasters, armed conflict, economic difficulties, the presence of pets and tourism are all factors that increased the spread of infection (Gouzelou E, 2012). In a study conducted by Al-Mayali (2005) in Al-Diwaniyah Governorate, 31 cases of cutaneous leishmaniasis were recorded. The highest cases were in January and February, and the infection was present in both males and females. Jha (2006) also indicated that the number of wounded American soldiers in Iraq reached 2000 wounded soldiers from (2006-2004), romuhammad (2007) confirmed in Dhi Qar the distribution of injury by gender. While Kashkul (2009) indicated that the peak of cutaneous leishmaniasis infection in Al-Qadisiyah governorate was in January and February, according to the statistics of the Health Protection Department in the governorate, which amounted to 600 cases in Al-Saniyah district and at different ages in both sexes, while Al-Nasiri (2009) indicated to 468 injury in Salah al-Din, Samarra and Baiji Al-Sharqat, Tuz Khurmtu and Al-Dour, during (August 2007 until July 2008).

In central Iraq, Qadir and his group (2009) recorded the variation in infection rates in the cities of Iraq. The highest infection rate was in Salah al-Din governorate with a rate of 2.3%, followed by Dhi Qar governorate with 1.6%, while it was in Baghdad 0.08% and in the country 0.06%. The statistics of the World Health Organization (WHO) (2010) indicated the most prominent types of vectors of leishmaniasis (*P. alexandri*, *P. papatasi*, *P. sergenti*) and that man is the sure reservoir and that the most epidemiological types of skin are (*L. Major* & *L. tropica*) and visceral (*L. infantum* & *L. donovani*). (Statistics of the Ministry of Health 2010-2012) 12,595 cases of cutaneous and visceral leishmaniasis were

recorded during these two years, and 1052 cases were recorded, as well as in Maysan, 368 cases of visceral leishmaniasis were recorded out of a total of 4107 in all of Iraq.

Yasiri record 2012)) In a study of leishmaniasis and sand flies , the rate of cutaneous leishmaniasis was 78.27 % and the percentage of leishmaniasis was 21.23 % . visceral. Rahi . confirmed etal ., (2013) and by using the Genu spe-cific (PCR) technique in his study that the percentage of cutaneous leishmaniasis in Iraq L.Major is 63.6 % , which is the highest compared to L.tropica , which is 36.4 % . Dafi'i (2013) recorded high injuries in Al-Qadisiyah governorate distributed over the districts and some areas in it, where Al-Hamza Al-Sharqi district had the highest percentage of injuries, which amounted to 41.81 % , while the lowest percentage of injuries was 1.8 % recorded in Al -Mahanawiyah district , while Al-Shafi'i recorded 18.18 % and down by recording injuries, the governorate center recorded 12.72 % were injured, and Al-Sudair recorded 10.9 % of injuries, and Al-Daghra 9.09 % injury and 5.4 % injury .

Leishmaniasis spreads in areas where the summer is dry and its length of time is long, and the presence of dry sandy and desert areas has a significant impact on the spread of the vector and its relationship to heat and humidity so that the climate and dry environment are ideal conditions for the occurrence of infection and the active movement of the insect (Goto , 2011)) Leishmaniasis infections also increase in some months of the year, especially in September, October and the second, until they reach their peak in January and February, then decline and disappear in August (Gultekin, 2017).

Materials and working methods

Histological biopsy

Seven (7) biopsy tissue sections were collected from cutaneous leishmaniasis patients according to the method of Bancroft & steven (9182) .

Methods of Diagnosis

Clinical Diagnosis

Cases of cutaneous leishmaniasis were diagnosed clinically by the dermatologist at Al-Sadr Teaching Hospital, Al-Hakim General Hospital, and Al-Manathira General Hospital in Al-Najaf Governorate.

Microscopical Diagnosis

Microscopic diagnosis of the parasite is carried out in two ways: (I) Thin blood was taken from the side of the ulcer according to the method of Film John and petri (2006) to see the flagella- less Amastagote phase and its surrounding macrophages, according to the following :

- One drop of blood was placed on a glass slide, taken from the tip of the ulcer using a medical syringe size (1 ml).

- Alopecia brought another slide close to the previous slide so that the blood spread over the edge to make a navigation, and left for 30 seconds to dry in the air and then fixed using methylated absolute alcohol, then dried with dissection paper and disposed of the remaining alcohol.
- tint was used They compressed the slide for 20 minutes, then washed the slide with plain water, cleaned it with filter paper, then at room temperature, and finally examined it by a light microscope with an oil lens with a power of (100x).

(-) Biopsy was performed according to the method of Bancroft & Steven (1982) , where the edge was taken from the ulcer and under the supervision of the specialist, and it was according to the following steps:

- Fixation of the form : After taking the form from the patient's skin, the form is kept in glass containers with a tight lid and containing a concentration of 10% formalin for a period of 24 hours.
- Dehydration and clearing : in which the sample is passed with different concentrations of absolute ethyl alcohol upwards (70%, 80%, 90%, 100%) for two hours for each concentration, then it is laundered with xylene for (20) hours, according to the sample size.
- Infiltration or impregnation: molten paraffin wax is used at a degree of (85°C), where the samples are placed with xylene in a ratio of (1:1) in an electric furnace for half an hour.
- Embedding : The samples are placed in special wax molds prepared for this purpose and molten wax is poured over them and left until they solidify with wax, then isolated from the mold and kept until the cutting process.
- Trimming and sectioning : where special blades are used to get rid of excess wax, then they are installed on the microtomed manual cutting device, with a thickness of (2-5) micrometers , and then placed in a water bath at a temperature of (84 °C) and then placed on the glass slides using Mayer's albumin material and left in the oven For 1-2 hours to dry at a temperature of (37°C).
- Staining and loading: Here, the glass slides that hold the samples are placed in xylene for (15) minutes and get rid of the paraffin wax . Each concentration, then the hematoxylin formula is used for (5-10) minutes, then washed with tap water for (5) minutes, then the eosin dye is used for (15) seconds, then the absolute ethyl alcohol concentrations are used up (70%, 80%, 90%, 100%) Canada balm for final fixation and put the cover slide cover and then examined under a light microscope to see histological changes.

Preparation of coloring pigments:

- Preparation of Geimsa stain :
Prepared according to the method of Kawakeb Abdul Mukhtar et al. (1982) and consists of:
Gimsa dye powder with (25 ml) glycerin and heat the mixture at a temperature of (60°C) for 2 hours in the oven , then add (75 ml) of methyl

alcohol to the mixture, then take 4 ml of this solution and complete its volume to 100 ml by adding water. Distilled and adjust the pH to 6.8.

- Preparation of hematoxylin stain Hematoxylin
Prepared by dissolving (2.5 g) hematoxylin powder stain in (25 ml) absolute ethanol alcohol , hen (50 g) potassium alum was added, which was previously dissolved in hot water, then the mixture was boiled and (1.25 g) of mercuric oxide was added mercuric oxide to have a dark purple color. After cooling the solution, (20 ml) glacial acetic acid was added to it and filtered before use.
- eosin tincture Eosin stain
Consists of (1 g) of alcoholic eosin with (99 ml) of ethyl alcohol Ethyl alcohol.

Results

Epidemiological study results

Table
1-4 Percentages of the number of people infected with Leishmania parasite according to age groups

%	Leishmania parasite	Other skin diseases	The number of examined	age categories
3.1	2	34	36	1 - 10
33.8 **	22	46	68	11-20
29.2 *	19	50	69	21 - 30
20	13	42	55	31 - 40
6.2	4	37	41	41 - 50
6.2	4	23	27	51 - 60
1.5	1	21	22	61 - 70
100	65	253	318	the total
6.3				chi - square arithmetic
1.64				tabular chi - sq 0.05

(*) means there are moral differences (significant effect).

Table 2-4
Percentages of the number of people infected with Leishmania parasite according to sex

sex				Number of injured	age categories
%	female	%	male		
0	0	3.1	2	2	1 - 10
7.7	5	26.2	17	22	11-20
10.8	7	18.5	12	19	21 - 30
6.1	4	13.8	9	13	31 - 40
3.1	2	3.1	2	4	41 - 50
1.5	1	4.6	3	4	51 - 60
0	0	1.5	1	1	61 - 70

29.2	19	70.8 *	46	65	the total
7.3					Arithmetic v
1.96					Tabular T P < 0.05

Table 3-4
Percentages of the number of people infected with Leishmania parasite according to the nature of the dwelling

The nature of the residence				Number of injured	age categories
%	Countr y	%	City		
1.5	1	1.5	1	2	1 - 10
18.5	12	15.4	10	22	11-20
13.9	9	15.4	10	19	21 – 30
10.8	7	9.2	6	13	31 – 40
4.6	3	1.5	1	4	41 – 50
3.1	2	3.1	2	4	51 - 60
1.5	1	0	0	1	61 – 70
53.9 *	35	46.1	30	65	the total
2.4					Arithmeti c v
1.96					Tabular T P < 0.05

The current study showed that there is a relationship between the number of people infected with the cutaneous leishmaniasis parasite and the presence of the vector . 7) At a rate of (10.8 %) in the absence of the carrier.

Table 4-4
Percentages of the number of people infected with Leishmania parasite according to the presence of the vector

%	Number of injured	The number of people examined	Presence of the vector insect
89.2 *	58	226	exists
10.8	7	92	not found
100	65	318	total
8.3			Arithmetic v
1.96			Tabular T P < 0.05

Table 5-4
Percentages of the number of people infected with Leishmania parasite according to the number and location of ulcers in the body

%	total injuries	4	3	2	1	number of ulcers
						Its location in the body
49.2	32	2	5	8	17	the face
**						

30.8 *	20	1	4	6	9	upper extremities
20	13	0	3	4	6	lower extremities
100	65	3	12	18	32	total
4.4						chi - square arithmetic
0.71						tabular chi - square P < 0.05

Table 6-4
Percentages of the number of people infected with Leishmania parasite according to the type of ulcer

%	Number of injured	type of ulcer
35.4	23	dry sore
64.6 *	42	wet ulcer
100	65	total
5.3		Arithmetic v
1.96		Tabular T P < 0.05

Table 7-4
Percentages of the number of people infected with Leishmania parasite according to the shape of the ulcer

%	Number of injured	ulcer shape
50.8 *	33	knot
32.3	21	plaque
17.9	11	papule
100	65	total
5.3		chi - square arithmetic
0.71		tabular chi - square P < 0.05

January recorded the highest number of infections (27.8%), followed by February, November, December, October, and October, with rates (24.6%) , (12.3%) , (12.3%) and (10.8%) , respectively. While no injuries were recorded during the month of May , July and September, and there were significant differences according to the statistical study and at the level ($p < 0.05$)

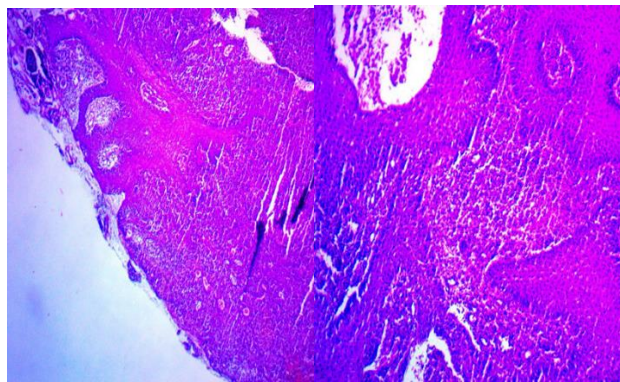
Table 8-4
Percentages of cutaneous leishmaniasis infection with skin diseases similar to it according to the months of the year

%	The number of people infected with leishmaniasis	Other skin diseases	The number of people examined	months of the year
**27.8	18	32	50	January
*24.6	16	23	39	February
7.7	5	18	23	Managed

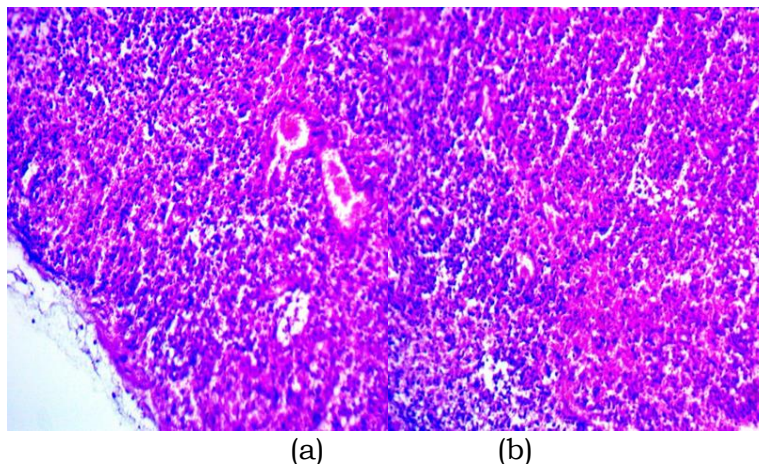
1.5	1	21	22	April
0	0	14	14	May
1.5	1	20	21	June
0	0	20	20	July
1.5	1	22	23	August
0	0	15th	15th	September
10.8	7	22	29	October
12.3	8	21	29	November
12.3	8	25	33	December
100	65	253	318	total
8.3				chi - square arithmetic
4.57				tabular chi - square P < 0.05

Histological study

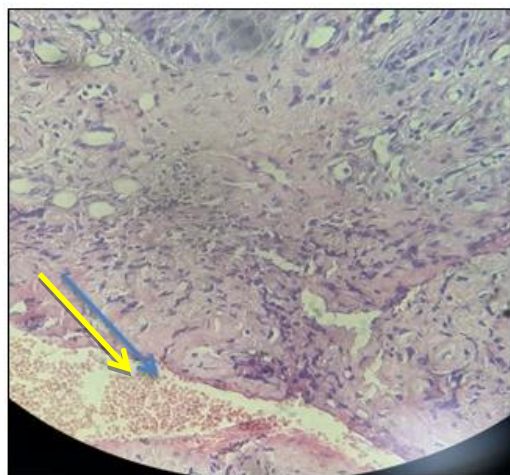
A group of histological sections were attended from (7) cases infected with cutaneous leishmaniasis at different stages of infection, and the histological changes were observed in the epidermis and dermis, the spread of the parasite and some macrophage cells and the appearance of the parasite in the Amastigote phase and the occurrence of the phenomenon of infiltration in the epidermal sections and some slides recorded necrosis In the necrosis tissue with an increase in the number of immune cells as a result of infection with some plasma cells , neutrophils , acidophil cells, some lymphocytes and monocytes . Vacuoles were observed in the epidermal papillae .As for the dermis of the skin, it showed some changes such as necrosis and enlargement in it, in addition to the occurrence of a wide spread of fibrin Fibrin accompanied by Bleeding in the Reticular layer



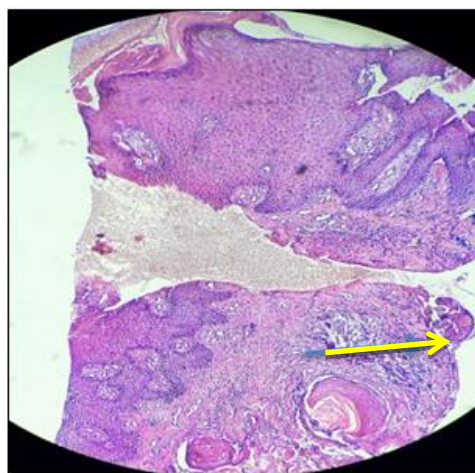
Picture 1. Histological section of skin affected by cutaneous leishmaniasis , showing a) squamous -looking epithelium with obvious ulceration and b) heavy acute inflammatory cells (neutrophils, histiocytes) with micro abscess formation a-10x,b-20x The dye used is H&E



Picture 2. Histological cross-section of the skin affected by leishmaniasis or cutaneous disease , a,b showed marked acute inflammatory cells (neutrophils, histiocytes) with microscopic abscess formation , 40x The dye used is H&E



Picture (4) a histological section of the affected skin leishmaniasis , showing bleeding at the site of infection. The dye used) H&E .(Energy Zoom x40



Picture 3) (a tissue section of the affected skin leishmaniasis , showing the occurrence of keratosis In the area of the epidermis and dermis . The dye (H&E) .Zoom power .X40 .



Picture) 6 (of a man with cutaneous leishmaniasis (the forearm).

Picture) 5 (A man with cutaneous leishmaniasis (the palm)



Picture 7. of a woman suffering from cutaneous leishmaniasis (the forearm)



Picture) 9 (of a man with cutaneous leishmaniasis (left leg(

Picture) 8 (of a man with cutaneous leishmaniasis (ulna.(

Discussion

The results of the current study showed that the incidence of cutaneous leishmaniasis in Najaf governorate was (20.44) % , as shown in Table (1-4) . The reason is due to their geographical proximity, in addition to the similarity of social conditions in terms of the presence of displaced people and the lack of migration between the two governorates for work, as well as the climatic situation and the absence of a large disparity in it. While the current study did not agree with the findings of Al Shukr (2012) , where it recorded (71%) in Najaf and Al-Mousawi (2015) , and (55.55%) in Karbala and Salman (2017) , and with a percentage of (55.55%) in Karbala and Salman (2017). (69.39 percent) in Najaf and Abu Dawanij (2014) at a rate of (6.78 percent) , and the reason for the varying rates of infection in these governorates may be attributed to the different number of displaced people to those areas as a result of the security situation, the high number of residents in them, the large number of injured people from the popular crowd and the health conditions in terms of personal hygiene and the use of special tools and sterilizers or not. Or as a result of raising animals in and near population areas, which led to an increase in the spread of infection in them compared to the weakness of health services provided to the population. This percentage also recorded significant significant differences through statistical studies of the results and at the level of significance ($p < 0.05$) .

The results of the current studies showed significant differences between the incidence of cutaneous leishmaniasis and age groups at the level of probability ($p < 0.05$) , where the age group from (20-11) years recorded the highest infection rate (33.8) % , followed by the age group (30-21) year and at a rate of (29.2) and this is consistent with the study carried out by Al Shukr (2012) in Najaf

Hashiguchi, 2014)) in Iran. This may be attributed to the spread of children and adolescents and their high activity and leaving the home, which enables them to be vulnerable to the bite of the sandfly, while the group (30-21) years old is mostly displaced youth and volunteers in the popular crowd and they are the ones who provide livelihood for their families , This agrees with Salman (2017) And the Jaouen , (2019), while the lowest infection rate was (1.5 %) and (3.1) % in the age group (70-61) and (10-1) years, respectively, and this may be due to the lack of activity carried out by these groups. And the lack of responsibilities outside the home, in addition to the difference in the standard of living of families and the disparity of classes led to the lack of injury, and this does not agree with what Abu Al -Dawanij referred to. (2014) in Basra, where a large infection was recorded in the age group (1-10) years, and this was attributed to the sand fly's preference for this category in terms of skin vitality and frequent contact with the external environment.

The results of the current study indicated that there were significant differences at the level ($p < 0.05$). In terms of infection with leishmaniasis and gender, where males recorded the highest infection rate of 70.8% , while females recorded (29.2%), as shown in Table (2-4) . This may be due to the fact that males are more likely to leave work and jobs than females, as well as customs The social aspect in terms of decency and veil by females, and this agrees with Al-Dafa'i (2013) males (59%) and females (49%) and Al-Mousawi (2015) males (57%) and females (43%) , and that most of the reviewing men are fighters and the Popular Mobilization Forces This agrees with Salman (2017) males (82.4%) and females (17.6%) and also agrees with Horta, 2012) in Iran, as his study recorded a percentage of (60.5%) in males and the lowest infection was in females with a percentage of (39.5%) and it did not agree The study is consistent with the findings of Salman (2001) in Syria, where the percentage of males is (49.45%) and the percentage of females is (50.55%) . The difference in percentages may be due to the customs and traditions in society, which differ from one place to another.

The results of the current study agreed with the findings of Daham and Al-Alusi (2011) in Salah Al-Din Governorate in that males are the highest percentage of females, but without the presence of moral differences . Males with a percentage of (61.41%) and females (37.59%) , and the results were also agreed with a study conducted by Jafari, 2015)) in Wasit. While the results did not agree with the findings of Al Shukr (2012) Where the females reached the highest percentage (57.31%), while the males (42.68%) . The results of the current study showed that there were significant differences at the level ($p < 0.05$) between the incidence of cutaneous leishmaniasis and the area of residence, where the infections reached their peak in the countryside (53.9%) and the least in the city (46.1) as shown in Table (3-4) and this It does not agree with the findings of Al-Tufayli (2003) in Najaf. This also does not agree with the findings of Hoffbr, 2019) in Najaf, where urban areas had a higher rate of infection than rural areas (45.4%). (45.6%) , respectively, as well as the current study did not agree with what was reached by Abu Al - Dawanij (2014) where the highest rate of infection was in urban areas (60.48%) and rural areas recorded (39.52%). The reason for the difference with researchers who recorded the highest injuries in the city can be explained due to urban expansion and the transformation of agricultural areas into residential areas and opening doors and windows during sleep, especially On the other hand,

with the power outage, this time is an activity for the female house fly, as well as the lack of services in some areas of the city and the lack of spraying pesticides in the streets to combat this insect.

As for what the current study indicated, the high incidence of infection in rural areas is due to the availability of a suitable environment for the hosts that transmit and store the parasite from rodents and dogs, as well as the presence of water swamps suitable for the vector insect in the stages of its life cycle and the presence of waste in most places and animal excrement, which provides a suitable place for the growth and presence of the carrier host (Al-Harams), and that the low level of cultural and health awareness in these areas led to an increase in the rate of infection in them. The results of the current study showed that there is a significant relationship and a significant difference in the statistical study and at the probability level ($p < 0.05$) between infection with cutaneous leishmaniasis and the presence of the vector insect, as shown in Table (4-4) , where the results of the current study indicated that the places where there are many The rate of infection was 89.2 %) and the places where the insect was not present was (10.8%) and this explains the main role of the insect in transmitting the infection compared to the places where it is not present, as well as the lack of use of pesticides and control and the availability of the appropriate environment for it led to an increase in the incidence of infection, and this is consistent with Al-Moussawi (2015) in Dhi Qar, where it scored (84.9%) in the areas of presence (Al-Harams) and (15.1% in the areas where it is not present, and this result is close to what appeared in the current study and agrees with Heidarpour M, 2012)) and (Jacobson RL, 2011) .

The results of the current study, as shown in Table (5-4) , showed that there were significant differences in terms of the incidence of cutaneous leishmaniasis , the location and number of ulcers in the human body, and at the level of probability ($p < 0.05$), and according to the statistical study of the study, the highest injuries were in the face area by (49.2% , followed by the upper extremities with a percentage of (30.8%) and the lowest rate of infection was in the lower extremities (20%) . The results of the current study agreed with the findings of Al-Moussawi (2015) in Karbala, where it indicated the distribution of skin ulcers on the bodies of the injured, which was the highest percentage In the face area, which includes the largest number (44%) , which is similar to the results of the current study of the face area in the injured. While the results of the current study did not agree with Al-Shakr (2012) , where the face region represented the least area of injuries (6.46%) , the upper extremities had the highest rate of injury (51.24%) and finally the lower extremities with a rate of (38.80%) . The defensive mechanism (2013) , whose results were identical to Al Shukr (2012) and Salman (2017) , where the percentage of defensive players was the upper extremities (50.35%) , then the lower extremities (24.46%) , then the face (17.98%), while Salman (2017) recorded in the extremities The highest percentage is (54.41%) and the lowest is in the face (2.94%) .

In the current study, it is attributed to the fact that the face is the highest in the number of injuries, because it is the most exposed area of the body, and because when sleeping, all the body is covered except for the area of the face that is exposed to an insect bite (Al-Harams), as well as the category of children and

adolescents, and this is consistent with what Al-Mousawi (2015) reached in Karbala (Kadhim, 2020), but the current study agreed with all the aforementioned studies in terms of the fact that the injury in the upper extremities is higher than the injury in the lower extremities. In view of the social beliefs and customs in covering the lower extremities and wearing socks, this led to the reduction of injuries in these extremities. As for the number of injuries, the current study agreed with many studies in terms of the number of injuries, where the single injury was the highest percentage among the multiple injuries from (4,3,2,1) Al-Moussawi injuries (2015), where the percentage recorded by one bite was (63.55%) in Karbala and the percentage recorded by Al-Mousawi (2015) in Dhi Qar (39.5%).

The current study showed that the rate of one infection in it amounted to (49.23 percent), which is a percentage similar to what Salman (2017) found, where it was (41.18%) for one infection, and the percentage of the largest number of ulcers, which is (4) ulcers, is the lowest (6.15%), and this is what applies With all the aforementioned studies in Iraq and some other international studies (Gualtieri, 2019), the reason for the large number of single ulcer infections in cutaneous leishmaniasis patients is attributed to the patient's immunity and this agrees with (Al-Mousawi, (2015 in Dhi Qar), as well as the study agreed with Abu Al -Dawanij (2014) the rate of infection with one ulcer was (35.48%), while the current study did not agree with Al Shukr (2012), where it recorded that people with multiple ulcers had the highest rate of infection (41.46%), and those infected with one rate recorded the lowest rate, which amounted to (3.65%).

The current study showed, according to Table (6-4), that there was a significant difference at the level ($p < 0.05$) between the incidence of cutaneous leishmaniasis and the type of ulcer. Of the type L. Major that causes wet ulcers, and that this rise may be due to the climate in the governorate and diagnosis. The results of the current study agreed with Al Shukr (2012), who had the highest percentage of wet ulcers (51.21%), while the lowest percentage was dry ulcers (15.85%). While the current study did not agree with Salman (2017), who recorded that dry ulcers were higher than wet ulcers, amounting to (76.47%) and (11.76%), respectively. Also, these results did not agree with what Al-Mousawi (2015) found in Dhi Qar, where His study recorded a percentage of (72.1%) for dry ulcers and a lower percentage (14%) for wet ulcers. The wet type is the most common in Iraq and the presence of secondary infection (Grekov I, 2011).

The results of the current study showed that there was a significant difference at the probability level ($p < 0.05$) for the statistical study between infection with cutaneous leishmaniasis and ulcer form. The current study recorded the highest infection rate in the form of a nodule (50.8%) and the lowest percentage in the form of papule (17.9%), as shown in Table (7-4), and the results of the current study agreed with Salman (2017), where it recorded that the node shape was the highest percentage of ulcers and amounted to (67.65%) and the lowest percentage of the papule shape, which amounted to (18.82%). These results are close to what The findings of this study, and this study also agreed with the findings of Al-Moussawi (2015) in Dhi Qar, where the highest percentage of node patients was (65.1%), and the lowest percentage was for the papule form (8.1%).

The reason for the different forms of ulcers (nodule, plaque, papule) is a result of the different resistance and immunity of the infected, and the difference in the reaction of the immune system in the body of the infected, which causes the emergence of these types of ulcers, which differ in terms of external appearance (Fernandes-Flores, 2016). Or it returns to the victim's awareness of going to the doctor and treating the injury early to prevent complications and ulcers in the pill, which turns from a simple form to advanced forms (Firmino-Cruz, 2019)). The current study indicated that there is a large discrepancy in the number of injuries during the months of the year, and the statistical study recorded the existence of significant differences through the chi-square test , with a level of significance $p < 0.05$, but the highest injuries were in January and February, respectively, amounting to (18) injuries, at a rate of (27.8%).) Followed by February with (16) injuries, at a rate of (24.6%) compared to the rest of the year. Also, the same number of injuries was recorded in the months of November and December (8) injuries at a rate of (12.3%) and (7) injuries in October, with a percentage of (10.8%), while the month of April, June and August recorded one infection at a rate of (1.5%), while no injuries were recorded during the month of May , July and September, which amounted to (0%) .

The results of the month of February in our current study agreed with the findings of Abu Al -Dawanij (2014) in terms of the highest injuries, at a rate of (33.87%) . The results of our study also agreed in terms of recording injuries in the month of July and September (0%) . Our study also agreed with Al-Moussawi (2015) in Dhi Qar in registering the highest injuries in the month of February. Our study did not agree with Al-Moussawi (2015) in Dhi Qar in terms of no injuries recorded in the month of May , while Al-Moussawi (2015) recorded (3) Injuries, while the result was close between our study and Al-Mousawi (2015) in January in recording the most infections during it. These discrepancies in the percentage and number of infections may be attributed to the fact that the incubation period varies from person to person and according to the immune system of the host, as well as changes and fluctuations in climate and temperature in the country as well. It has a role in the disparity, in addition to the spread of waste, lack of hygiene and the presence of ponds and water swamps that led to the provision of foci for this insect and the continuation of its life cycle. The study agreed in terms of the disparity of injuries with (Daham and Al- Alusi , 2011). Table No. (8-4) shows the infestation during the months of the year .

Histological study

The results of the current study of biopsies taken from the skin of patients with cutaneous leishmaniasis for (7) cases showed the importance of doing histological examinations, as they are considered one of the diagnostic methods for the parasite . The epidermis and dermis are circular in shape with a kinetoplast nucleus, and this is in agreement with what was found by Kumar (2014)) . The results of the current study confirmed some indicators in the tissue, such as a large infiltration in mononuclear cells and a large mobilization of plasma cells, as shown in Figure (2), (b-1) . Kato, (2013) . Some tissue sections of the epidermis showed the occurrence of a group of small holes in it called necrosis , around which plasma cells collect, with tissue enlargement and destruction as a result of

the phenomenon of granuloma in the affected areas, as shown in the picture 3)) This agrees with Kamhawi , (2017) .

(4) showed the occurrence of bleeding in some layers within the skin tissue and the expansion of blood vessels in it, and this is consistent with what was obtained. Khan (2018) . The results of the current study indicated that there were phenotypic differences in the sections prepared from the wet and dry ulcers, where the dry ulcer showed the presence of granulation in the granuloma area with a small number of plasma cells and mononuclear lymphocytes, in contrast to the sections prepared from the wet ulcers which are ulcerated where the numbers are large and aggregations of plasma and lymphocytes, and this agrees with the results of Kaye P, (2011) and Kuhls K, (2011). and (Al-Abdullah 2012). Dafi (2013) indicated the presence of the parasite in the dermis area surrounded by a dense fibrous mass with inflammatory infiltration of macrophages and lymphocytes and a layer of abscess as a result of the breakdown of inflammatory cells, including the short-lived neutrophil, in addition to the production of antibiotic-like substances called defensins to kill the pathogen and be strong and oxidative And in this type of swallowing the death of the phagocytic cell .

Conclusions

- The epidemiological study showed an increase in the rate of parasitic infection of cutaneous leishmaniasis , depending on many causes of spread according to gender, residence , age and months of the year . The second is the most harvested number of injuries.
- There is a positive correlation between infection with cutaneous leishmaniasis and the increase in the number of the host that transmits the parasite.
- Tissue biopsy sections are a diagnostic tool for the parasite, as they indicated the possibility of a flagellaless phase in the epidermis and dermis tissues of those infected with the disease.
- Cutaneous leishmaniasis is a common transmissible disease and is considered one of the endemic diseases in Najaf and Iraq alike.

Recommendations

- Emphasis on spreading health education and awareness among citizens through seminars introducing the parasite and disease and how to prevent and treat, in addition to combating the host vector and storage by spraying chemical pesticides, controlling rodents and loose dogs, urging cleanliness and disposal of waste and organic materials that are an environment conducive to the growth of the vector (Sand fly).
- Emphasis on the development of effective treatments to reduce the severity of skin infection, and the search for plant extracts with positive efficacy to cure the disease.
- Using the electron microscope for accurate diagnosis of tissue damage caused by the parasite .

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