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Epidemiological and Diagnostic Study for the causes Swimmer's itch in AL-Najaf AL-Ashraf Governorate.

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ABSTRACT

This study was conducted to identify of the epidemiological aspects for swimmer's itch disease in three locations from AL-Najaf AL-Ashraf Province and diagnose the larva stage which causes this disease . The study samples were collected monthly from August 2015 to July 2016 from three locations , the first location (AL-Mishkhab) , the second location (Bahar AL- Najaf depression) and the third location (AL-Hurria) . The samples examination in the invertebrates laboratory in College of Education for Girls to identify the larva stages of Trematodes which infection the freshwater snails. During the current study collected 1350 snails belong to species *L. auricularia* from the study locations and exam the snails and record 575 snails infection with larva stages of trematodes and the total rate of infections 42.5 % . The results of the questionnaire revealed during the study period that presence significant difference that showed the males infection rate in swimmer's itch was 53% and females infection 33% . The highest infection was in age (10-20) years and with rate 68 % , and the highest rate from persons showed symptoms of the disease after exiting from the water and dryness the body and with rate 45 % . The highest rate for infection was in the persons those have them the symptoms of the disease most from two days and with rate 71% . Either function fishing and aquatic birds recorded highest rate of infection on others from the human activities with rate 40% . The infection was in the upper and lower terminals in patients was highest rate 65% from the other body parts . the results showed that noontime hours was the highest in the infection with swimmer's itch from other and with rate 59 % . Either the rate infection in the shallow water was the highest 82 % , and also the results revealed that there are difference in the infection for the months of the year and the August was the highest in recording the infection from the other months and with rate 28% .

Keywords: Swimmer's Itch. Najaf , Epidemiology.

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INTRODUCTION

Swimmer's itch is disease calculate from the annoying skin diseases that described of the first time in America in Northern Michigan City in the year 1928¹, this disease known in the tropical and clement locations and that is big effect on the water sporting activities engagement so consider one of the health problems in Europe. The study be applied in Switzerland showed between 555 swimmers in Geneva Lake 153 status infected with Swimmer's itch².

Reference the study³ to that Birds schistosome cercariae take five minutes of penetrate the human skin and tight the cercariae by ventral sucker and amputation the tail during vibration movements and start the itch as destroyed the cercariae during with Malpighian layer in the skin, and return appearance the primary itch to the mechanism effects for penetrate and analysis the tissues then dilatation in blood vessels result presence the strange bodies development the papules which response the immune system of host for antibodies which are cercariae and show the infection in the hot summer days⁴.

Show the schistosomes high adaptability for intermediate host and these are produce big number from cercariae⁵ and these cercariae take different patterns from behavior even arrived to the final host

Studies about Swimmer's itch

Studies and researches variation in the different world locations about Swimmer's itch and habituate causes this case morbidity in the US to many types from Bird schistosome cercariae and Mammals of which *Ornithobilharzia odhneri*⁶, *Schistosomium douthitt*⁷ and record⁸ sea type from Birds schistosome cercariae named *Cercariae littoranlinae*

In Asturalia *C. parocellata* main cause of these case morbidity in Lake Wagin⁹ while Swimmer's itch in Iran it result the exposure of Mammals Schistosome cercariae *O.turkestanicum*¹⁰, isolation cercariae *Trichobilharzia* in Germany and return this is the parasites to Bird schistosomes¹¹.

In Iraq that afew studies take Swimmer's itch of which the study that examination seven types from birds and eight types from snails but can not isolation adult stages of schistosomes in birds or cercariae in snails¹², and the study that take helminthes some aquatic birds in Basrah and isolation birds schistosome cercariae from snails *Melanobis tuberculata* in Shatt AL-Arab of the first time¹³, and the study¹⁴ that isolation cercariae for Bird Schistosome and also the study that diagnose eight types from cercariae isolation from three types from snails *Lymnaea auricularia*, *Melanopesis nodosa*, *M. tuberculata* from stream AL- Husseinia in Karbala¹⁵.

MATERIALS AND METHODS

Samples collection

Collection samples the *Lymnaea auriculariae* and brought to the labrotary by blastic bottles contain water from location of the collection with water plant such *Ceratophyllum* and putting in the glass baths.

Examination of Sampling

After brought samples of the *Lymnaea auriculariae* snails to the labrotary for diagnosis the infected snails by Dissecting Microscope putting the snails in the petry dishes contain on the water from the study location and concentrate on these dishes electric light 100 watt for period 60-120 minutes for facilitate exiting the larva stages from snail and then crushing shell of the snail by small forces for finding the cercariae This study contain the special questionnaire and that dispersed on patient with Swimmer's itch in the study locations.

Diagnostic larvae stages

Diagnose the cercariae whenever be life and that many special for brid *Schistosoma* such presence Oral sucker, Ventral sucker, Fin fold, and vary the tail if was split or non spilt.

Swimmer's itch study

Distributed the questionnaire on patient with Swimmer's itch for know of some indicators about this disease contain the informations : sex- age- time appearance the itch-period stay the skin rash- distress the infected during the hours day –typing the human activities – appearance the itch during months the study and distress the infected according of water depth.

RESULTS

This study was conducted to identify the causes of swimmer's itch in the different locations in the AL-Najaf AL-Ashraf Governorate and describe the cercariae that being transparent and swim in the surface layer of the water and *Lymnaea auricularia* .

Described and measure (20) samples from cercariae and all the measurement taking by Micron . The body long ranged between (250-300) and the width (75-80) contain two suckers one of them in the lower part and named ventral sucker and the diameter ranged (50-60) and distance from the end of the body between (45-60).

0 The tail is long and split and length between (100-150) and width (25-30) and branched in the terminal in to two parts and length of each branch ranged (30-40) as in picture (1) .



Picture (1) show shistosome furcocercous cercaria

Study the swimmer's ith

This study contain the special questionnaire and that dispersed on patient with Summer's itch in the study locations and showed The results current study the infection rate in the males highest from the females in the males the rate 53 % and females 33 % like in the table (1).

Table (1) number examined accord the sex and patient with rate

Sex	Examined Number	Patients	Rate %
Males	150	80	53
Females	90	30	33
Total	240	110	46
L.S.D=3.53			

Also showed the results the infection rate in the age groups (10-20) year its highest with rate 68% and least infection rate was in the old that age grade (50-60) year with rate 12% like in the table (2) .

Table (2) number patient and infection rate according the age groups

Age groups	Number examined	Number patient	Rate infection
10-20	80	55	68
20-30	59	30	51
30-40	46	16	35
40-50	30	6	20
50-60	25	3	12
Total	240	110	46
L.S.D=9.75			

Either the results with period appearance the itch that highest infection rate was in the persons those are showed symptoms the disease after exiting from the water and dryness the body with rate 45% while nothing record any infection in the touch period with the water like in the table (3) .

Table (3) number patient and the percentage of infection according the itch showing period

Itch feeling period	Number patient	The percentage %
During touch with water	0	0
After exiting from water and dryness the body	50	45
After exiting from water with one hour	36	33
After exiting from water with more than one hour	24	22
Total	110	100
L.S.D=10		

Either the results showed that highest rate from patient may continues have symptoms the infection more than two days while nothing record any infection in period less than one day like this table (4) .

Table (4) number patient and percentage of infection according the itch staying period

Itch staying period with days	Number patient	The rate%
Less than one day	0	0
(1-2) days	32	29
More than two days	78	71
Total	110	100
L.S.D=21.64		

Also the results showed highest infection rate was have persons those Fishermen and A quatic birds with average 40% and less infection average was with cause clean the clothing with average 10% like in this table (5) .

Table (5) number patient and rate of infection according of the types activities

Types activity	Number patient	Percentage %
Fishing and water birds	44	40
Washing the clothes	10	9
Swimming	20	18
Agriculture and irrigation	36	33
Total	110	100
L.S.D=6.31		

And from the results showed highest rate from patient was infection location have them in the upper and lower terminal together and with rate 65% while nothing record any infection in the trunk area like showed in this table (6).

Table (6) number patient and rate infection according the infection location

Infection location	Number patient	Percentage %
Lower and upper terminal	72	65
Just lower terminal	15	14
Trunk and terminal together	14	13
Just upper terminal	9	8
Trunk	0	0
Total	110	100
L.S.D=12.66		

The results showed distress the infections with swimmer's itch reached highest rate during hours noone while the first morning hours record the less rate 10% like showed in the table(7) .

Table (7) number patient and rate the infection during hours days

Time	Number patient	Percentage %
First morning hours	10	9
Noontime hours	65	59
Afternoon hours	20	18
Sunset hours	15	14
Total	110	100
L.S.D=12.08		

Also the result showed relation bottom the water in the infection with swimmer's itch and found the biggest rate for infection in the shallow water that depth the water less than one meter and with rate 82% while in the depth water more than one meter was less infection rate 18 % like showed in this table (8) .

Table (8) number patient and rate of infection according for depth the water

Type the water	Number patient	The rate%
Shallow water less than one meter	90	82
Depth water more than one meter	20	18
Total	110	100
L.S.D=2.12		

The result showed whearase the month August the highest in the infection record and with rate 28% while nothing record any infection in January and February months and like showed in this table (9) .

Table (9) number patient and the rate infection according for months the year .

Months	Number patient	Percentage %
August	31	28
Semppteber	10	9
October	6	5
Noveber	4	4
Decmber	2	2
January	0	0
February	0	0
March	2	2
April	6	5
May	9	8
June	15	14
July	25	23
Total	110	100
L.S.D=2.47		

Table (10) comprision the characters Shistosomes cercariae recorded in Iraq with cercariae the current study

The character	Avian schistosome cercariae ¹³ AL- Mayah (1990)	<i>C .melanoide</i> ¹⁶ AL- Hussein 2000)(<i>C.Lymnaea</i> ¹⁶ AL- Hussein 2000)(<i>C.Lymnaea</i> ¹⁴ AL- Kuzaaay 2008)(Cercariae the current study
Body long	90-139	222-275	350-420	200-310	250-300
Width	38-69.7	78-100	75-100	80-110	75-80
Tail long	40-210	228-280	425-480	200-300	100-150
Width	16-28	32-55	50-75	40-56	25-30
Cleavage long	74-102	110-138	223-253	140-186	30-40
Diameter the ventral sucker	10-19			50-70	50-60
Away the ventral sucker from end body	16.6-50			50-70	45-60
Response for light and put in stay	Positive response stay under surface layer of water	Positive response wrap spiral and stayin surface		Goaway fromligh and clamping by ventral sucker	Swimming in all sides
Intermediate host	<i>Melanoides tuberculata</i>	<i>Melanoides tuberculata</i>	<i>L.auricularia</i>	<i>L.auricularia</i>	<i>L.auricularia</i>

DISCUSSION

After Obtaining on measurement bird schistosome cercariae (body long -width-tail long and width-long cleavage the tail execute comparison the measurement with the measurement of the other study cercariae of arriving to differences between them and table (10) show most these differences .

Schistosome cercariae differentiated from other furcercous cercariae do not contain of pharynx and that special characters for schistosome cercariae and on base the eyespots considered as cercariae for birds shistosome ¹⁰ except cercariae *Heterobilharzia Americana Schistosomatium douthitti* and all Mammals schistosome cercariae do not contain eyespots .

Show from the comparison the cercariae recorded current with schistosomes others recorded in Iraq there are big different in measurement and behavior so that cercariae is new record for type from Avian schistosome cercariae which causes of Swimmer's itch in Iraq.

Swimmer's itch

During questionnaire was the infection rate the males 53% and females 33% that's show to presence significant difference in the infection males and females this different with refer ¹³ in nothing presence significant difference on base the sexual and that's agree with found ¹⁷ .

Showed the highest infection was in age (10-20) and with rate 68% and cause that's love them to swimming in this age that's agree with found¹⁸ record highest infection rate in the age (9-16) , and replace cause highest rate for infection between children because activities them always in the shallow water and which concentrate the cercariae in there 's water¹⁹ .

The highest rate from persons showed symptoms of the disease after exiting from the water and dryness the body and with rate 45% , as refer²⁰ to the primary itch show after penetrate the cercariae of the human skin about one minute and the itch start when destroy the cercariae crossing Malpighian layer.

The result showed the highest rate of infection was in the persons those have them the symptoms of the disease from two days and with rate 71% but do not record any infection in period less than one day and

that's agree with the study²¹ which showed whereas the big rate from patients continues have them symptoms of infection about (3-7) days with rate 75% .

Ether function fishing and aquatic birds recorded highest rate of infection on others from the human activities with rate 40% because these persons became in contact with water and long period during days and makes them more susceptible for infection with larva cercariae.

The infection was in the upper and lower terminals in patients was highest rate 65% and may clear up¹⁰ that the right hand and legs the persons they are working farming the rice in Iran showed them symptoms the infection but do not show symptoms on the left hand that carry bunches the seedlings out the water and do not record any infection in the trunk area.

The results showed that noontime hours was the highest in the infection with swimmer's itch from other and with rate 59% and causes that to high temperature stimulate emission with more manys²² .

Either the rate infection in the shallow water was the highest 82% and showed ¹³ concentrate the infection in shallow water may be to the concentration the larva cercariae that carried by the water currents.

Also the results revealed that there are difference in the infection for the months of the year and the August was the highest in record the infection from the other months and with rate 28% and may be cause that to high temperature lead to stimulate and starting the cercariae or high temperature may be stimulate the cercariae to crossing the skin and that's agree with mentioned²³ , and also the working in fields the rices be in August month and swimming in water more than rest the months.

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