Comparative Study Of Mites Infecting Mice & Rats In Al-Diwaniyah City, South Of Iraq

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Abstract:

The study aimed at comparing infection of *Myobia musculi* with that of *Ornithonyssus bacoti*, during the study period of 2016-2017, A total of 220 rodents were identified including *Mus musculus*(89), *Rattus norvegicus*(37), *R. rattus*(48) & Swiss albino(46). After the Specimens are anesthetized, mites are investigated. It was found that *Mus musculus* were infected by *Myobia musculi* at 35.9% comparison with *Rattus norvegicus*, *R. rattus* and Swiss albino were infected by *Ornithonyssus bacoti* at (29.7%, 41.6%, 8.6%) respectively.

Keyword: mits, *Myobia musculi*, *Ornithonyssus bacoti*, mice, rats

Introduction:

Rodent belong to the Animal kingdom, Chordata phylum- Mammals class within the Real Mammals above the order of above the heading and to the order of Rodentia [1]. They are considered the highest orders of Mammals, as they constitute a ration more the 40% among all kinds of Mammals , and the most successful biggest groups of Mammals in multiplication. They are world-wide prevalence and are able to accommodate to get wide a variety in environments [2].

Rodents play an important role in human health and economy as they have close contact with man[3]. They are considered as carrier of many diseases, either directly through a rodent's bite, excrete or urine contaminated with infections, since rodents can be carrier hosts, Reservoir hosts or intermediate

hosts, or indirectly through Arthropoda parasiting on a rodents outside like Lice, Fleas, Mites and Ticks that work as a carrying medium of diseases between human beings and other animals[4].

Ectoparisites are regarded as temporary or perminant living creatures with rodents in the way they get their living needs[5]. As a number of them have a medical and veterinary importance. They play a role in transmitting many diseases such as plague, leptospirosis, salmonellosis, rat-bite fever, leishmaniasis & murine typhus [6].

Infestation of rodents with parasitic mites was frequently reported including that of Funta *et al*. [7], Reeves and Cobb [8], and Frye *et al*. [9]. In Iraq, ectoparasites of wild animals were poorly studied (Abul-Hab and Shihab[10]. Abul-hab [11,12] reported *Ornithonyssus bacoti* (Hirst, 1913) from commensal and semi wild rodents. Then Abul-hab and Shihab [10] found it on the Long-eared hedgehog *Hemiechinus auritus* (Gmelin, 1770) collected in Wassit Governorate, Central Iraq. Al-Zahidi [13] studied the ectoparasites of some rodents in Baghdad and found that Black Rat *Rattus rattus* infested with *O. bacoti.*

Materials and Methods:

Wild rodents had been trapped by hunting devices of various sizes using bread, cucumbers, carrots, fat and meat as baits, then carried to the entomology laboratory. Anesthesia Syringe were used with Chloroform to dissection the sample, chloroform is sprayed into the rodent's nose [14].

Mouse is put under Optika (SZM-2) dissecting microscope to find out the mites of *M. musculi* while mites of *O. bacoti* leave the host rat under anathesia feeling its blood cooling down, then it can be observed well by naked eye, without need to find it out via the dissecting microscope. Samples were kept in ethanol 70%. In order to clarify the case, KOH 10% solution was used, then dehydrated by a series of concentrations of 70%, 80%, 90% and absolute ethanol. Samples, then mounted on glass slides in Canada Balsam solution. Finally, samples were examined by the Olympus (BX51) light microscope using X10 and X40 objectives. Species identification of mites were carried out according to the availablesystematic keys [15].

Results:

During the years 2016-2017, work to find out mites in 220 rodents including including *Mus musculus* (L., 1758) (89), *Rattus norvegicus* (Berkenhout, 1769) (37), *R. rattus* (L., 1758) (48) & Swiss albino(46), Table 1 shows that the infection ratios in *Mus musculus*, *Rattus norvegicus*, *R. rattus* and Swiss albino were (35.9%, 29.7%, 41.6% and 8.6%) respectively. Mice were infected by *M. musculi* (Schrank, 1781) that belonged to Order Trombidiformes, Family Myobiidae, in comparison with the rats which were infected by *O. bacoti* belonging to order mesostigmata, family Macronyssidae.

Table 1: Ratio of mites being isolated from rodents:

Rodent species	Number examined	Parasite species	Males infected	Prevalence %	Females infected	Prevalence %	Both Sexes	Prevalence %
Mus musculus	89	*Myobia musculi*	18	20.2	14	15.7	32	35.9
Rattus norvegicus	37	*Ornithonyssus bacoti*	5	13.5	6	16.2	11	29.7
Rattus rattus	48	*Ornithonyssus bacoti*	7	14.5	13	27	20	41.6
Swiss Albino	46	*Ornithonyssus bacoti*	2	4.3	2	4.3	4	8.6

Fig. 1 :The mite *Ornithonyssus bacoti* X40

Fig. 2 :The mite *Myobia musculi* X40

Discussion:

In current study, the ratio of *O. bacoti* parasite infection emerged at 29.7% in the *Rattus norvegicus*, 41.6% *Rattus rattus* and 8.6% in Swiss Albino which was higher than the ratio recorded by Al-Zahidi [13] in the *Rattus rattus* by 8.3% and rather slightly less than that of Frye *et al*., [9] at a ratio of 37.6% in the *Rattus norvegicus*, these results were due to the wide parasite spread and its prolonged presence in the host [16]. The ratio of the *M. musculi* infection was 35.9% in *M. musculus*, which was higher than that recorded in *M. musculus* of 11.8% (Funta *et al*.) [7], and less than that recorded by Reeves & Cobb [8] in *M. musculus* of 66.7%. Those differences were mainly the environmental circumstances affecting parasite spread and the collection areas as well [17].

M. musculi mite infect mice [18] compared with the mite of *O. bacoti* infecting rats and mice as well as hamster, birds and other mammals [16]. *M. musculi* doesn't infect man, but he is infected by *O. bacoti* causing skin infection ,dermatitis, as a result of direct contiguity with infected animals [19]. Form of *M. musculi* mite is interminable and smaller than *O. bacoti* mite which has an oval form as the length of *M. musculi* mite is 300µ, and its width is 190µ while length of *O. bacoti* apprised 750µ and when it is full of blood it apprises 1mm [17].

Conclusions:

Rodents are considered as intermediate and final hosts of many parasitic pathogens causing common infections with humans. A comparison is made between infection with *M. musculi* infecting mice with *O. bacoti* infecting rats.

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