

Diagnostic and epidemiological study of Haematopinids' tuberculosis lice parasitizing on cows in some areas of Salah al-Din Governorate Iraq

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Abstract

The study aimed to examine 137 heads of cows in some areas of Salah al-Din Governorate, which belong to three different areas (Al-Bu 'Ajil, Al-Alam, and Tikrit), for period from beginning of November 2018 to March 2019, to record types of lice parasitizing them, and results showed infection Cows with one type of lice, Haematopinus tuberculous, with an infestation rate of 29.927%, and parasite was diagnosed according to phenotypic and standard characteristics. The highest rate of injury was recorded in herds of Al-Bu Ajil area, at 36.206%, and lowest rate in cows in Tikrit, where rate was 22.222%, and highest rate of injury was recorded during month of December, reaching 41.463%, while lowest rate was during October, the rate was 14.285%. The infestation ceased during month of March, and adults of lice were isolated in different proportions from different places of body of cows under study, and percentage in udder area was 60.97%, followed by 26.82% for tail area, and lowest rate of infection in skin area around eye and ear was 12.19%.

Keywords: Diagnosis of lice, Haematopinus tuberculous, cows, cattle, an epidemiological study, Iraq.

Introduction

Animal production constitutes approximately 30% of human needs, so countries sought to provide requirements of their citizens by improving their livestock through importing improved species and breeds with high production and applying genetic engineering programs, but I found many obstacles that prevented required development in wealth. Among the most important are ectoparasites that parasitize livestock, including lice and ticks, which cause severe economic losses (Promrangsee, 2019). External parasites cause skin scratches and wounds that help germs enter body, causing complications such as pyoderma or mastitis in sheep (Cotter, 2019; Biniam, 2021).

Lice are forced ectoparasites, specializing in the host type (Blowey & Weaver, 2011; Khan et al., 2019). There are suborder sucking lice whose mouth parts are adapted to absorb blood and bodily fluids (Smith, 2000; Blowey & Weaver, 2017). There is one type of biting lice that parasitize cows and buffaloes and that is *Bovicola bovis* (Townsend, 2006).

The study aimed to investigate and diagnose parasitic lice species on cows in some areas of Salah al-Din Governorate / Iraq and spread of the parasite according to different environmental conditions for months of study.

Materials and Working Methods

Field study: The number of examined cows reached 137 heads of cows in Tikrit, for period from November 2018 to month of March 2019, samples

were collected from three different areas in Salah al-Din Governorate (Al-Bu 'Ajil, Al-Alam, and Tikrit), and the visits were at a rate Twice a week "for the gathering areas where groups of cows exist, as they grazed in pens attached to houses, and some of them consisted of mud rooms with roofs made of reeds and floors of weeds, with availability of fodder and mud manholes". Laboratory study: Lice samples were collected from different parts of animal's body such as the neck, chest, abdomen, and tail. The clinical signs appearing on affected animals were recorded, such as severe itching, roughness of hair and wasting, noting large numbers of lice on body. The samples were kept in small plastic boxes containing formalin at a concentration of 10 lice were diagnosed using an optical microscope under a magnification of 100X depending on morphological and standard characteristics according to (Soulsby, 1982; Wall & Shearer, 2001), and their length was measured using an ocular micrometer.

Results and Discussion

The results of study revealed that cows were infected with one type of lice, Haematopinus tuberculosis, and Haematopinus, depending on shape of the pointed head, legs of equal length and antennae consisting of five pieces with presence of dorsal side of lice, and type H. tuberculosis was diagnosed depending on morphological characteristics. And standard, the chest plate was rectangular in shape, with a front projection on sides, and length of an adult male was 3.5-4 mm and length of an adult female was 4-5.5 mm.

The total infection rate with lice was 29.927%, and highest rate of lice infestation was recorded in examined cows in Al-Bu Ajil area 36.606%, followed by cattle herd in Al-Alam region, where infection rate was 27.906%, then lowest infection rate in cattle herd was in Tikrit, it reached (22.222%)

Table 1: percentage of lice infestation in examined cattle herds under study

areas	No. of caws examined	No. of caws infected	%
Al-Bu 'Ajil	58	21	36.206
Tikrit	36	8	22.222
Al-Alam	43	12	27.906
Tikrit	137	41	29.927

There was a variation in rates of infection with intrusive lice on herds of cattle under study, and the reason may be due to poor management and lack of concern for cleanliness of animals and barns, and this is consistent with what (Kebed & Fetene, 2012) found in Amhari in Ethiopia, where he stated that the rate of cattle infestation with lice reached 63.5. % Due to poor management .Thomas, 2015) recorded multiple types of lice, *H. quadripertuses*, *H. eurysternus*, *Linognathus vituli* were parasitic on cows in California and Florida, and young cows were

Table 2: percentage of monthly tick parasite infection in cows under study with meteorological data rates

months	Total number tested	Positive number	%	Temperature			rain	humidity
				super	junior	rate		
October2018	7	1	14.285	11.4	5.7	8.5	9.3	53
November	18	5	27.777	12.6	5.9	9.2	14.6	62
December	41	17	41.463	15.1	6.8	10.9	28.4	74
January2019	34	12	35.294	13.7	3.7	8.7	35.3	75
February	29	6	20.689	17.4	4.6	11	33.3	63
March	8	—	—	21.7	7.9	14.8	25.6	56
total	137	41	29.927					

Hasson (2016) recorded a 69.4% infection rate for sheep infestation with scabies, 16.7% for cows' infestation with types of ticks, and an incidence increased in October by 22.2% and lowest rate in September by 15.3%. (Mallah & Rahif, 2016) conducted an epidemiological study to detect infection with ectoparasites by examining 1933 cows slaughtered in slaughterhouses of Al-Shula and Al-Karkh and Amiriya Research Station (Ibaa station) and College of Veterinary Medicine field in Baghdad, at age of 6 months -8 years, and a total infection with ticks was recorded at a rate of 12.9% and higher. Percentage in September and lowest in November.

(Zenebe, 2005; Shiferaw & Abebe, 2006) stated that cattle infestation with ticks increases in humid weather of year, i.e., in winter and early spring than in dry weather in summer and early autumn.

The adult lice were isolated from different parts of body of cows under study with different proportions, where infection rate in udder area was 60.97%, followed by 26.82% for tail area, and lowest percentage in skin around eye and ear was 12.19% (Table 3).

more infected than adults with lice. (Al-Naji et al., 2014) compared the ectoparasites of a group of domesticated animals in Basra Governorate / Iraq, and recorded types of parasites: *Hippobosca* sp., *Boophilus* sp., *Rhipicephalus* sp., *Hyalomma* sp., *Haematopinus* sp. They parasitized cows, buffaloes, sheep, dogs, and horses, and recorded it in numbers of 26, 11, 15, 29 and 8, respectively. lice were detected in 16 (94%) out of 17 herds visited, two species of lice, *Bovicola bovis* and *Linognathus vituli* were identified (Mckiernan et al., 2021).

(Gibney et al., 2005) confirmed that lice infestation is reduced in animals with good nutrition. Hussain et al. (2005) indicated that the drugs used for control and treatment gradually lose their efficacy due to growing resistance of lice to drugs used, such as Dormectin, Ivermectin, Coumaphos.

The highest rate of injury was recorded during wet weather of year, that is, in winter and early spring, as highest rate was recorded in month of December 2018, reaching 41.463%, and it followed in January 2019 with a rate of 35.294%, while the lowest rate was during October, the rate was 14.285 %, And no infection occurred during March (Table 2).

Table 3: rate of infection with lice in examined herds of cattle under study (137) according to location of infection

Location of infected	No. of caws infected	%
udder	25	60.97
skin around eye and ear	5	12.19
tail	11	26.82
total	41	29.927

Lice infestation was recorded at 38.3% in cows and 41.2% in buffaloes, and *H. underuses* was recorded in a herd of cows and buffaloes in various regions in Pakistan (Naseem& Kakarsulemankhel, 2009). (Scofield et al., 2012) recorded an infection rate of 80% in adult lice, *H. quadripartite*, as parasites in cattle tail, around eye and ear, by 20%, and in udder area, by 98.46%, in herds of several regions in Brazil.

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