

First Serodiagnosis of *Brucella ovis* Among Rams With Epididymo-orchitis in Mosul City, Iraq.

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BRUCELLA *ovis* is an infectious cause of ovine contagious epididymitis in sexually mature rams, resulting in epididymo-orchitis leading to major economic losses to the sheep industry worldwide. For serodetection of anti *Brucella ovis* antibodies among sexually mature rams with epididymo-orchitis by using commercial indirect enzyme-linked immunosorbent assays (I-ELISA; IDEXX *B. ovis* Ab Test kit; Idexx Montpellier, France). During the period from September 2017 to the September 2018, a 200 sera were collected from 42 commercial flocks in Mosul city, Iraq. Scrotal palpation of rams may suggest the presence of this infection in a given flock. The results of the study revealed that, the seropositive animals for *B. ovis* infection was (12 \ 250) 4.8 %. The clinical alterations were observed by palpation in the seropositive rams, mainly on epididymes (66.7%) and testicles (33.3%), and (83.3%) alterations were unilateral, and 2/12 (16.7%) bilateral. This is the first study of serodiagnosis of ovine contagious epididymitis in Mosul city, Iraq. The study provided important information for authorities to planning the control and eradication program.

Keywords: *Brucella ovis*, Ram, indirect ELISA, Epididymo-orchitis, Serodiagnosis.

Introduction

Ovine contagious epididymitis is a chronic and economically important infectious disease in sheep and goats worldwide [1,2]. *Brucella ovis* is the main causative agent of disease [2,3]. Unilateral or bilateral of the epididymitis and orchitis are the main signs in the rams leading to reproductive disorders and infertility, and more rarely, abortions in ewes and increased perinatal mortality rates [2,4]. transmitting of disease between animals occurs frequently through the passive venereal route, but ram-to-ram transmission is also common. [5,6] Diagnosis of Contagious epididymo-orchitis can be made using clinical methods, bacteriological and serological tests. Clinical diagnosis lacks sensitivity because not all rams infected with *B. ovis* show palpable genital lesions [7]. Serological tests are preferred for routine diagnosis. Currently, the most widely used tests are Agar Gel Immunodiffusion (AGID), complement fixation test (CFT) and indirect ELISA [3]. Several types of I-ELISAs have been designed for detection of antibodies against *B. ovis* antigens with various results [8-11]. According to literature data, most I-ELISAs

appear more sensitive and less prone to problems than the CFT and the AGID [3,12]. Therefore, this study aimed to serodiagnosis of *Brucella ovis* using commercial I-ELISA (I-ELISA; IDEXX *B. ovis* Ab Test kit) among rams with epididymo-orchitis in Mosul city, Iraq.

Material and Methods

Sample collection

For a period of one year (September 2017 to the September 2018). A 250 fresh blood samples were collected from a local breed sexually mature rams with epididymo-orchitis at 42 commercial flocks in the Mosul city (is a major city, located some 400 km north of Baghdad, Iraq). Blood samples were collected from each ram by jugular venipuncture for sociological analysis and the clinical status of the animals was recorded.

Clinical examination

A total of 250 local breed rams were evaluated by palpation of scrotal contents to detect testes and epididymis lesions, any differences in size, consistency, shape or swellings in external genitalia were considered abnormal and were registered [2].

Serological examination

Blood samples were centrifuged for ten minutes at 1500 rPM to obtain the serum and then stored in -20 °C until use. For detection of anti *B. ovis* antibodies in the sera, a diagnostic commercial indirect ELISA (I-ELISA; IDEXX *Brucella ovis* Ab Test kit; Idexx Montpellier, France). The test was performed following the procedures described by the manufacturer.

Results

Twelve rams (4.8%) presented scrotal palpable lesions (epididymo-orchitis) in the Mosul city by using indirect ELISA, IDEXX *Brucella ovis* Ab Test kit. In this study, the percentage of negative samples were higher than the positive samples (Table 1). The clinical alterations were observed by palpation in the seropositive rams, mainly on epididymes 8/12 (66.7%) and testicles 4/12(33.3%), and 10/12(83.3%) alterations were unilateral, and 2/12 (16.7%) bilateral.

TABLE 1. Percentages of the anti *Br. ovis* antibodies in local breed rams with epididymo-orchitis in the Mosul city

The number of examined animals	Number of positive animals	Number of negative animals
	(%)	(%)
250	12 (4.8)	238 (95.2)

In this study, the percentage of negative samples were higher than the positive samples, which can be attributed to either to trauma or to the presence of many species of bacteria causing epididymo-orchitis in ram [2,4].

The most frequently reported bacterial isolates include *Actinobacillus seminis*, *A. actinomycetemcomitans*, *Histophilus ovis*, *Haemophilus spp.*, *Corynebacterium pseudotuberculosis ovis*, *B. melitensis* and *Chlamydomphila abortus* [2,4,29].

B. ovis infection was diagnosed in this study using commercially available Indirect ELISA kits [31]. A definitive diagnosis of *B. ovis* infection requires laboratory tests, including serology, bacteriology, and PCR [23,31]. I-ELISA has been shown to be the most sensitive and specific test. As a diagnostic serological method, the ELISA has important advantages over other serological tests commonly used for the diagnosis of ovine brucellosis, such as providing readily measurable results and being easy to perform and standardize [12,32,33].

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Discussion

Brucella ovis is a major infectious cause of ovine contagious epididymitis in sexually mature rams, resulting in economic losses for the sheep industry worldwide [2,3,6]. The result of our study was revealed in that 4.8% of examined rams have antibodies against *B. ovis.*, this result represents the first serodiagnosis of ovine contagious epididymitis in Mosul city, Iraq.

Ovine brucellosis caused by *Brucella melitensis*, and *B. abortus* was reported in the small and large ruminants in many previous works in the different parts of the Iraq [13-16].

B. ovis infection was confirmed in different countries such as New Zealand [17], Romania [18], Croatia[19,20], Serbia [21], Brazil [22], Argentina [23], India [12,24], France [25] and Turkey [10], while some countries report never having recorded it as in Italy [26], Iran [27], and Canada [28].

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Conflict of interest:

Authors state no conflict of interest.

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الكشف المصلي الاولي للبروسيلة الضانبة في الكباش المصابة بالتهاب الخصية والبربخ في مدينة الموصل ، العراق

عمر خزعل الحنكاوي ، مآب ابراهيم الفروه جي و اسامة موفق العراقي
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تعد جراثيم البروسيلة الضانبة هي المسبب المعدي لالتهاب البربخ الساري في الكباش الناضجة جنسياً ، والذي يسبب التهاب الخصية و البربخ مؤديا خسائر اقتصادية كبيرة لصناعة الأغنام في جميع أنحاء العالم. اجريت الدراسة للكشف عن تواجد الاجسام المضادة للبروسيلة الضانبة في الكباش الناضجة جنسياً المصابة بالتهاب الخصية و البربخ باستخدام العدة التجارية للمقاييس المناعية المرتبطة بالأنزيم غير المباشرة

(I-ELISA ، IDEXX B. ovis Ab Test kit ، Idexx Montpellier, France)

خلال المدة من سبتمبر ٢٠١٧ إلى سبتمبر ٢٠١٨ ، أذ تم جمع ٢٠٠ عينة مصل من ٤٢ قطع تجاري للضأن في مدينة الموصل ، العراق والتي اظهر الجنس الصفني للكباش فيها إلى توقع وجود الاصابة في القطيع.

اظهرت نتائج الدراسة ان ٤,٨ ٪ (٢٥٠\١٢) من الحيوانات كانت موجبة مصليا لتواجد اعداد البروسيلة الضانبة. ظهرت التعبيرات السريرية عند الجنس الصفني للكباش الموجبة مصليا بنسبة ٦٦,٧ ٪ في البربخ وبنسبة ٣٣,٣ ٪ في الخصيتين اذ كانت التعبيرات بنسبة ٨٣,٣ ٪ في احد جانبي الصفن وبنسبة ١٦,٧ ٪ (١٢\٢٢) في كلا الجانبين. تعد هذه الدراسة هي الاولى للتشخيص المصلي لالتهاب البربخ الساري الضانبي في مدينة الموصل ، العراق. قدمت الدراسة معلومات مهمة للسلطات لتخطيط برامج المكافحة والقضاء على المرض.