ISOLATION AND IDENTIFICATION OF *Staphylococcus aureus* FROM TICKS ON THE CATTLE IN BASRA CITY

Moaed Hannon Al myahii , Hana Khaleel ,Hiba Ali Nasir

Department of Public health , College of Veterinary medicine, University of Basrah, Basrah,Iraq.

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Corresponding Author: hanaakhlil878@yahoo.com

ABSTRACT

Ticks are an important external parasite have a mechanical affect through an imbibing blood of the host and transferring a pathogenic bacteria or a virus. The present study was focusing on the isolation of bacteria from the ticks parasitized cattle in north of Basra city,This study was conducted in north of Basrah (Qurna district) from February to July 2017Atotal number of 80cattle parasitized with ticks were samplesIsolated ticks were identified as *Hyalomma* to recognize what types of bacteria might be existed in these ticks, some of the cultures and biochemical tests were used. As a consequence, *Staphylococcus aureus* being identified in 14 of cattle sampled that infected with ticks. Regarded to present study, *Staphylococcus aureus*is one of the most pathogenic bacteria that can have an impact on an animal health production and this study that conducted from little studies in Iraq especially in Basrah about diagnosis of bacterial infection from Ticks.

INTRODUCTION

Ticks is an obligatory ectoparasites that cause retarding in secondary infection andeventually on meat hygiene**.**animals can be parasitized by hundreds or may be a thousands of ticks, which has a direct effect or through transmit a disease to the host. As usual presence of ticks on the animal bodies, savagely can cause blood losses, decrease the weight, and produce a toxin. However, ticks are also vectors for many blood parasitic diseases. For example, most important parasitic diseases in

veterinary that encroach the livestock include Babesiosis, Theileriosis , Anaplasmosis, and Cowdriosis(1). These parasites can transmit via ticks which have been noticed widely spreading in tropical and subtropical countries, where ticks constitute one of the main difficulties for the development of the livestock breeding industry (2,3). However, tickseither carrying different types of pathogenic and non-pathogenic bacteria. The study has been performed in U.S revealed that tick species of *Rhipicephalussanguineus*are the host for many bacterial Pathogens included: *Anaplasmaphagocytophilum*, *Ehrlichiacanis*, *Ehrlichachaffeensis*,.*Ehrlichiaewingii*, *Rickettsia rickettsii*, *R. conorii*(4). Some types of ticks have become endemic in the United states when reptiles have been imported, which later found that carrying toRickettsia, which cause a fatal disease so-called heart water in the livestock(5). Later, (6) confirmed through using a molecular tools the inclination diversity of ticks to carry different types of bacteria such as *Stenotrophomonas*, *Staphylococcus*, *Pseudomonas*, *Acinetobacter*and *Bacillus*.

many viruses can transmit to human or animal by a tick. Here is an examples of virus called Tick-borne encephalitis (TBE) that recorded in a variouscondition in Europe and Asia regions, which caused by virus and transmit via tick bitting- considered is seriously and a hazard disease to the public health (7). Also the tick species*Ornithodorosmoubata* can transmit West Nile virus and Hepatitis B virus (8,9). The study has been conducted Portugal, found ticks carry to*Rickettsia* and *Borrelias*, which considered the most important agents that can threat the human life (10).

Virtually, ticks need to be eliminated by applying a suitable controlling program. As usual, acaricide drugs still have been used to kill the ticks nestled on the animal, but it have been no longer recommended as it's a toxic substance canresidue in the meat and milk, which has adverse impacts on public health (11). On other hand, production of vaccines has been successfully advised. Veterinary vaccines have several benefits most of which constraint the infectious diseases in the livestock (12). For example, aquaporin antigenic vaccine has showed an effectiveness to prevent cattle from invading byticks species *Rhipicephalusmicroplus*(13).

However, population of livestock in Basrais very huge, particularly in north of Basra. Also, ticks seem to be an endemic parasite in Basra and little studies have

conducted to asses an importance of ticks in transmitting of pathogenic bacteria to the livestock. Thus, present study aimed to investigate in which bacteria can be carried by ticks in cattle, samplingfocused in north of Basra city.

MATERIALS AND METHODS

1- Samples collection

This study was conducted in north of Basra (Qurna district) from February to July 2017, and 80 of infected cattle were included.However, the activity of ticks always has been noticed after winter tiding down, and almost always nestle in the hairless parts of animals for feeding on sucking blood. As a target samples, ticks were isolated carefully by using sterilised needle and forceps. Subsequently, ticks were kept in the containers and retrieved to the microbiological lab in college of Veterinary Medicine/BasraUniversity.

2- Bacterial culturing

A- Blood samples were obtained from the ticks femalesare bloated with blood, pierced by using a needle to make a small hole tocollect the blood samples.

B-Blood tick samples were putted in the nutrientbroth and incubated at 37 c for 24 hs

C- By using a loop full culture, samples were transferred from nutrient broth to Nutrient agar, Manitol salts agar, and blood agar.

D- Three of above of mentioned media were kept at 37 C in incubator for 24 hrs.

E- After one day, number of biochemical tests were used to defining a growth of bacteria included coagulase, catalase, citrate, indol, urease, oxidase, and triple sugar-iron tests.

RESULTS

Identifying the ticks:

The ticks that were isolated identified as *Hyalomma*according to (14) that has characteristics includedfestoon present in male but un clear in female especially in engorgement and sometime none present in other species. Eyes present and other none, pedipalps longer or short, the spiracles plate like long coma in male but triangular in female (internal end of spiracle have tail curved), female have scutum but male none, male have anal and subanal plate, and the legs both sex were banded. Fig (1,2) shows *Hyalomma* who identified the ticks.

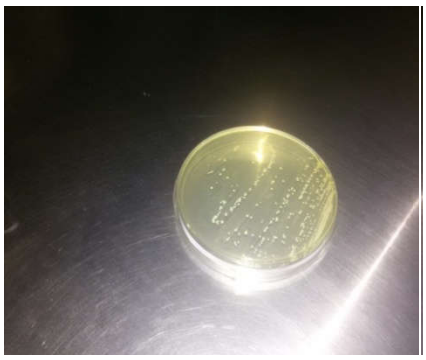
Figure 1: Ventralsurface of

Figure 2:Dorsal surface of

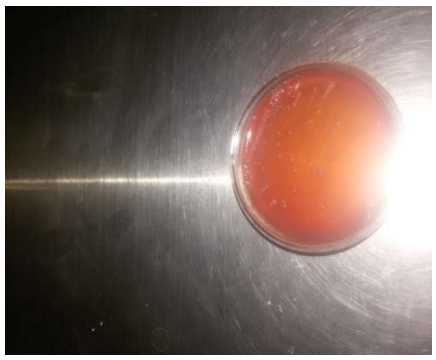
Examination of the bacteria cultures:

A) Identify bacterial colonies:

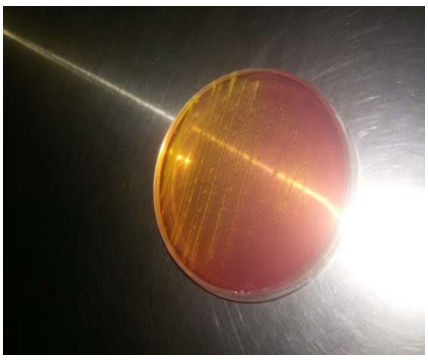
The growing of bacteria was identified as*Staphylococcus aureus*. On the nutrient agar, it appeared as a spherical in shape with smoothly surfaceFig.3. On the blood, it is appear as glistening, smooth, entire, raised, translucent colonies Fig.4while Fig. 5 the mannitol agar, growing of bacteria are glistering stained in a golden yellowish appearance. As a result of isolated samples, 14 of 80 cattle being sampled found to be positive on the agar growing cultures.



Figure(3) growth on nutrient agar



Figure(4) growth on blood agar



Figure(5) growth on manitol salt agar

B)The results of biochemical tests:

It was found that biochemical tests was positive for catalase, coagulase, and triple sugar iron tests, but negative toindol and oxidase test

Table (1) Illustrate the result of biochemical tests

Bacteria examined	Oxidase	Catalase	Coagulase	TSI	Citrate	Urease	Indole
Staphylococcus aureus	-	+	+	+	+	+	-

Table (2)The number and ratio of samples positive to *Staphylococcus aureus*

Site of infection isolated	Number of samples isolated	Positive to *S.aureus*
Vulva	23	2
Anus	18	5
udder	22	4
Ears	17	3
Total number	80	14(17.5%)

DISCUSSION

In this study, the bacterial cultures and biochemical tests were used to identify presence *Staphylococcus*inthe ticks of cattle. As a result, *staphylococcus aureus* is species that grew on the selective media and showed a positive inthe most of biochemical tests. For more explanation, indole was used to help differentiation *Staphylococcus* spp. and manitol salt agar was used to inhibit all other types of bacteria, and that can permit to *Staphylococcus aureus*to growing up, which appearance was golden yellow due to fermentation process of manitol(15).similar to our study, but it has a different host has been involved. (16) has isolated *staphylococcus* from hard tick *Hyalommaanatolicum*from the goats, through using a PCR and sequence to differentiation species of *staphylococcus*(17) isolated the bacteria *Bacillus*spp from the tick,*Ixodesscapularis*, which is responsible for Lyme disease.

However, from 80 of cattle sampled, 14 of them demonstrated carrying *staphylococcus aureus*. Means, presence the ticks in these cattle not only can cause damage through imbibing blood but also can have threaten these animals through as complexity of development secondary infection, and may be effect on quality of meat, which is important in food safety transmission pathogen.A survey of food from

retail markets and dairy farms in Turkey was performed between 2007 and 2008, *S. aureus* was found in 11.3% of meat, 10.2% of unpasteurised milk, 8.0% of dairy products (18).Here is the important of occurrence *staphylococcus aurous* as the bacteria can produce a toxin thatcontaminates the meat and subsequently have a serious impact in realm of public health. In most significant issue that associated with *staphylococcus aureus*is consider a risk factor to develop mastitis and then leads to decrease milk production(19). In conclusion from this study, ticks consider a vector not only for blood parasites but for carrying most pathogenic bacteria that have impact on retarding animal health and meat hygiene.

عزل وتشخيص بكتريا المكورات العنقودية الذهبية في القراد المتطفل على الماشيه في مدينة البصره

مؤيد حنون صيهود المياحي , هناء خليل ,هبة علي ناصر

فرع الصحة العامة ،كلية الطب البيطري،جامعة البصرة، البصرة ، العراق.

الخلاصة

يعد القراد من الطفيليات الخارجية المهمةوالتي لها تأثيرات ميكانيكية من خلال مص دماءالمضيف وكذلك لها اهميه فينقل البكتيريا المرضية أو نقل الفايروس. وقد تركزت دراستناعلى عزل البكتريا من القراد المتطفل على الماشية في شمال محافظة البصرة اجريت هذه الدراسة في قضاء القرنة ابتداء من شهر شباط الى نهاية شهر تموز ،إجمالي عددالأبقار التي اخذت منها العينات والمصابة بالقرادهي ٨٠ .شخص القراد المعزول بانه تابع الى جنس.*Hyalomma*.البكتيرياالتي شخصت في هذا القراد بعد استخدام بعض الاوساط الزرعية والاختبارات الكيميائية الحيوية هي المكورات العنقودية الذهبية والتيتم تحديدها في ١٤ من الماشية المصابة بالقراد. تعتبر دراستنا والتي من خلالها تم تشخيص المكورات العنقودية الذهبية في القراد تعتبر واحده من معظم انواع البكتيريا المسببة للأمراض والتي يكون لهاتأثير على صحة الحيوان من خلال الاصابة الثانوية ولها تأثير من جانب صحة اللحوم.

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