

Seroprevalence Study of Glanders in South Part of Iraq

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Abstract: The study was conducted to investigate the Seroprevalence of Glanders in south part or Iraq. Eight hundred (800) local and different horse breeds aged from (1.8–25) years old and from both sexes was examine during the period started from a 15.oct. 2020 to 20 April 2021. The 184 serum samples were drained from suspected horses to examined by using double antigen multispecies Elisa of *Burkholderia mallei*. Results show that only 4 (2.17%) horses give a positive result with the Elisa test in Maysan governorate. Whereas negative horses for glanders included 180 (97.82%) in the south of Iraq, and that Basrah and Thi-Qar governorates were negatively against glanders. Such favorable result help for equestrian regions and horse breeding. It has been concluded that, although a very low infection rate was indicated in maysan governorate, However, Glanders could be re-emerging compared with other south governorates (Basrah and Thi-Qar) which being free. Moreover, Basrah and Thi-Qar governorates can be used as free areas.

Keywords: Glanders, part or Iraq, Iraq.

Introduction: Glanders is an infectious zoonotic disease of *Equidae* as well as humans (1,2) Caused by *Burkholderia*

mallei which was notified by the world organization of Animal Health (OIE) (3). It is a highly contagious disease in horses,

donkeys and mules (4). The disease had a high mortality rate in equine 95%, and the fatality rate could reach to 50% in untreated human (5). It has been documented that Glanders is one of the pretentious disease by it is an intra-cellular bacterium of soil sources (6), as well as animals overcrowding, poor hygienic, stress, wet environment (7) and present of biological vectors could also play good roles in transmission. (8).

The acute form of Glanders was always affected donkeys terminated with death. However, the chronic form affected horses and lead to poor depilated disease terminated with death also (1).

It has been shown that, there are four forms of Glanders; cutaneous, pulmonary, nasal and asymptomatic carrier (9). The cutaneous form also called farcy may develop from skin injury or due to a secondary manifestation of the respiratory form, nodules, pustules and ulcers observed as a chain along the lymphatic vessels called (farcy cords) mostly hind limbs and can develop around the muzzle and anywhere on the body (9,10). The illness progress gradually over months to years and infected horses may recover but remain a potential source of infection (1). The asymptomatic carrier from latent infection of glanders can develops after a period of illness for several months, and can give a positive in Mallein test without obvious skin lesions can appears (7).

Accordingly, Glanders was eradicated from most of the countries; Western Europe, Northern America, Australia, and Japan (1,6). It was seen that Glanders outbreak

was re-emerging and increased at last ten years (1,2). However, it still endemic in the middle east areas (4). And has been reported in India and Pakistan (11), as well as Vietnam and Korea (12), China, Russia and Magnolia (6). Glanders was also identified in Iraq (9,13,14,15).

For the south region of Iraq researchers were interested to study the horse infections in joints, parasites and eye (16,17,18,19). As well as report on epizootic lymphangitis was issued (20). There is no confirmed and recorded statistical information about the disease in south part of Iraq, so the present study was aimed to follow up on this dangerous disease and it is possibility to detect it in the areas of southern Iraq.

MATERIALS AND METHODS:

In the current study (800) local and different horse breeds aged (1.8–25 years) and of both sexes was clinically examined from three governorates (Al- Basrah, Maysan and Thi-Qar) in the south part of Iraq. Accordingly, we chose randomly 184 blood samples was withdrawing from suspected horses, and divided according to region subsequently into Basrah (n=56), Maysan (n=62) and Thi -Qar (n=66), governorates in the south of Iraq.

The study was started from 15.oct. 2020 to 20 April 2021. All serum samples were subjected to Elisa test (indirect Double antigen multi species from ID VET – France) according to manufacture instructions. The breeds of horses involved Arabian, Thoroughbred, mixed breed, Athletic, breeding and work horses, as well as those horses of multipurpose. Clinical

finding recorded through personal face to face interviews with horses' ownerships, also collected the history of respiratory disorders (Coughing, Nasal discharge) and skin lesions (ulcers, nodules and abrasions (21).

Blood was withdrawing from jugular vein of each horse, serum was extracted and separate then storage at -18 C° (22). The laboratory work was done in the laboratory of veterinary clinical pathology, college of veterinary medicine-university of Basrah.

RESULTS

The examination of 184 horse's sera against Elisa test showed that 4 (2.17%) positive for antibodies against glanders as in table (1), and all those positive horses from governorate of Maysan, while Basrah and Thi-Qar governorates were negatively resulted.

More details about horses that infected by glanders recorded, which include a three horses from Al-Majar and one from Al-Kahla (table -2).

Table (1). The prevalence of glanders in horses at South Governorates of Iraq, using indirect ELISA test.

Governorate	No. of samples tested	No. of negative samples	No. of positive samples (%)
Basrah	56	56	0
Maysan	62	58	4(6.45%)
Thi-Qar	66	66	0
Total (%)	184	180 (97.82%)	4 (2.17%)

Table (2). Details of horses infected with glanders and their discrete in Maysan Governorate

Sequence	Gender	Colour	Age/year	District	Date of sampling
1	Stallion	Grey	2	Al-Majar	12.12.2020
2	Mare	Chestnut	20	Al-Majar	12.12.2020
3	Stallion	Black	4	Al-Majar	12.12.2020
4	Stallion	Chestnut	9	Al-Kahla	12.12.2020

DISCUSSION

The present study aimed to examine 25% of horse's in a populations located in the south part of Iraq (Basrah, Maysan and Thi-Qar) governorates, these areas have no athletic activities or race course, and owners keep horses for inherited tradition and to share in a feu local celebration events.

The horse's distribution among owners and farms may rarely reach 20 horses housed together in same place, stable or farm, and most horses cared all time by attendances or owners, therefor easy to have information and history from them (22).

In present study, the use of Elisa as a test for detection antibodies for *B. mallei* in horses was according to advice given by OIE

reports which detect antibody specific for the antigen binds to the target, and a labeled secondary antibody against the host species of the primary antibody binds to the primary antibody for detection (23), this sensitive method used for diagnosis of glanders in the middle east countries and was helpful screening test to select the free area (23,24). Moreover, Al-Ani was establishing Elisa test as high sensitivity diagnostic serological detector test for glanders in compare to agar gel immune diffusion, complement fixation test and haem-agglutination assay in in equestrian region in Baghdad-Iraq (13).

The ELISA test of serum that collected from 184 horses revealed that 4 were positive antibodies against glanders with overall prevalence was 2.17%, those animals which give a positive results could be infected via drinking contaminated water or shearing contaminated food with susceptible another horses, and those who participated in some equestrian sports competitions, which are sometimes held in the southern regions of Iraq (25). On the other hand, infected clothes may also be a good source for infection (1). In addition, scientists believe that symptomless horses can transmit *B mallei* to the others (21). Furthermore, Horses can get infection by skin abrasions and wounds, However, oral and nasal mucosa may be included. The results of the current study could be near close to Hussein (15), who found that the prevalence of glanders was 2.97% in Baghdad in the middle of Iraq. Glanders in Iraq since the first reported the disease it will occur as sporadic cases, the infected animal was killed according to health regime, or will isolated by attendance, and owners until killing or may could die then after will burned, so that will reduce transmission of disease (21), On the other hand there is no direct national border movement of horses by exportation or importation between the

target governorates and surrounding countries (Iran, Kuwait and Saudia Arabia (4), whereas horses Could be transported from north and middle then after to the southern part of Iraq.

The present study Was considered as the first investigation of Glanders at the south part governorates in Iraq. And the resent result of 2.17% positive and 97.82%negative of glanders in south part of Iraq was related to well controlled borders as well as for good management done by owners and horse birders and most horses breeding in small numbers and there was no crowd neither pad management (1). The four seropositive horses located in two discrete of Mayasn governorate which gave as attention to eliminate the disease by eradication of those animal according to our advice for their owners 26).

CONCLUSION

We conclude that glanders in horses is re-merging in Maysan, while Basrah and Thi-Qar governorates were not appear the diseases in the south of Iraq, and may be used as free areas.

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دراسة الانتشار المصلي لمرض الرعام في جنوب العراق.

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الخلاصة

أجريت الدراسة لمعرفة الانتشار المصلي لمرض الرعام في الجزء الجنوبي من العراق. تم فحص ثمانمائة (800) رأس من الخيول المحلية ومختلفة السلالة، وتتراوح أعمارهم من (1,8-25) سنة ومن كلا الجنسين خلال الفترة من (الأول من أكتوبر 2020) والى (20 أبريل 2021) وتم فحص المصل لمئة وأربع وثمانون (184) من الخيول المشتبه بها باستخدام فحص الاليزا من نوع (مستضد مزدوج متعدد الأنواع) لجرثومة *Burkholderia mallei*. وبينت النتائج أن 4 خيول فقط (2.17%) أعطت نتيجة إيجابية في اختبار إليزا وبمحافظة ميسان. في حين شملت الخيول السالبة للرعام 180 (97.82%) في جنوب العراق، بينما كانت محافظتي البصرة وذي قار سلبيات ضد الرعام. وهذه النتيجة الإيجابية تساعد في إيجاد مناطق مناسبة للفروسية وتربية الخيول. ونستنتج إلى أنه على الرغم من وجود معدل إصابة منخفض للغاية في محافظة ميسان، إلا أنه يمكن إعادة انتشار المرض مقارنة بمحافظات الجنوب الأخرى (البصرة وذي قار) التي تكون خالية. علاوة على ذلك، يمكن استخدام محافظتي البصرة وذي قار كمناطق حرة خالية من الرعام.

الكلمات المفتاحية: الرعام، جزء من العراق، العراق.