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Original article

Identification of Babesia species and vector ticks in equine in Meyaneh area

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ABSTRACT

Babesiosis, a protozoan parasitic disease, caused by different species of Babesia. They transmitted by hard ticks, and can infected domestic, wild animals and rarely human. Babesiosis is a worldwide disease and their exclusively vectors are ticks. We tried to do a complete investigation to determine the Babesiosis in equine and also the Babesia vectors in Meyane area North West of Iran from March to December 2009. For this aim total of 300 horse and ass were selected randomly for identification of infection with Babesia in blood smears and ticks on their bodies. The blood smears were taken from external veins of ear and stained with Gimsa. During this survey total of 300 examined equine, 49 (16.4%) were infected by ticks. 18 of the infected cases were horses that among them 9 were infected by *Hyalomma anatolicum anatolicum*, 3 were infected by *Rhipicephalus bursa* and one case had *Haemaphysalis punctate* and the other ones had simultaneously ticks infection. 31 asses were infected too, 14 had *Hyalomma anatolicum anatolicum*, 8 had *Rhipicephalus bursa* and 2 of them were infected by *Haemaphysalis punctate*. 5 stained blood smear of horses shown infection by *Babesia equi* but there were no Babesia infection in ass blood smears. In order to the results, the most common species of Babesia that infect horses in Meyaneh area is *Babesia equi* (4.1%), and the most tick infestation were *Hyalomma anatolicum anatolicum* (11.66%).

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1. Introduction

Babesiosis is one of the important disease that threated equine and transmitted by hard ticks such as Dermacentor, Hyalomma, Rhipicephalus and etc. In 1910 Notal and Stericlandhad shown that there are 2 different species of Babesia in equine, one of them is bigger and similar to bovine Babesia bigemina, called in Piroplasma cabal. And the smaller one was called as Nuttallia equi by Bergs and Fransoa (Soulsby, 1982). Smith and Clearen have proved that Babesia species are cause of Texas fever in cow and the most important note is that they have proved this disease are transmitted by ticks for the first time (Saunders, 1997). This finding was noticeable in control and prevention of Babesiosis and the other tick-born disease in human and domestic animals (Don et al., 1996 and Holbrook, 1998).

2. Materials and methods

During March to December 2009, blood smear samples and also ticks on the bodies of 300 horse and ass were randomly collected from Meyaneh area.

The blood smears were stained by Gimsa and the ticks were examines by proper diagnostic keys (Tenter et al., 1986). T.Test, One Way Anovaand also non-parametric tests Mann-Whitney and Kruskal-Wallis were used for analyzing statistical association between the data results.

3. Results

Total of 300 equine ,251 (83.6%) had no ticks infection ,but 49 (16.4%) were positive for it.18(14.75%) horses among 122 examined horses were infected by ticks that 9 of them had Hyalomma anaticolicum anaticolicum, 3 of them had Rhipicephalus bursa and one of them had Haemaphysalis punctate. In 3 cases simultaneously infected with Rhipicephalus bursa and Hyalomma anaticolicum anaticolicum was shown and 2 of them were simultaneously infected with Hyalomma anaticolicum anaticolicum and Haemaphysalis punctate. Totally of 178 ass,31(17.41%) were infected by ticks. Among them 14 cases have Hyalomma anaticolicum anaticolicum,8 cases have Haemaphysalis punctate and in 6 cases simultaneously infected by Rhipicephalus bursa and Hyalomma anaticolicum anaticolicum was reported and a case was infected by Hyalomma anaticolicum anaticolicum and Haemaphysalis punctate simultaneously. There was no significant difference between frequency of ticks in horse and ass. (P>0.05). The most frequent tick was Hyalomma anaticolicum anaticolicum with number of 85 and after that Rhipicephalus bursa with number of 35 and the less frequent were 12 Haemaphysalis punctuate (Table 1).

Table 1
Correlation between genuses of Tick and Babesia.

Tick	Horse		Ass	
	Infestaion of Tick	Infection of Babesia equei	Infestaion of Tick	Infection of Babesia equei
Rhipicephalus bursa	6	1	14	0
Hyalomma anaticolicum	14	4	21	0
Haemaphysalis punctate	3	0	3	0

In July 26 ticks from 9 (18.4%) cases were collected which was the highest rate of infestation, and the lowest rate were 3(6.1%) infected cases and 7 ticks in November and April. There was no significant difference between number of ticks and seasons (P>0.05). 2-3 years equine were the most infected by ticks (38.8%) and 0-1year had the lowest infection (25.6%). There isn't any significant difference between tick infestation and age (P>0.05).

The locations of ticks on the bodies were around mane, pubic area and under the shoulders, 34.7%, 32.7% and 14.3% respectively. There was no significant difference between locations and total number of the ticks (P>0.05).

Among 122 horses blood smears 117(95.9%) had no Babesia infection and 5 (4.1%) were infected only by Babesia equi but there were no infection in any blood smears of 178 ass. Significant difference between the kind of equine and Babesia equi infection has been shown ($P < 0.05$). 4 Babesia infected horses were infected by Hyalomma anatolicum anatolicum and one of them was infected by Rhipicephalus bursa simultaneously. There was no correlation between the kind of ticks and Babesia equi infection ($P > 0.05$). 4 Babesia infected cases had been reported in summer and one case was in spring but any infection had been reported in autumn.

4. Discussion

Meyaneh city with having 7200 equine is one of the equine foci in Iran, because of cold weather and temperature and humidity conditions of this region, the activity time for ticks are limited so sampling had been done in this period time.

In order to Babesia infection reports in Iran 3 horses were infected by Babesia caballi (Seifi et al., 2000), For the first time Lotfollah and Nuri had reported Babesia equi from a mare in Khuzestan in 1992 and in the same year Babesia equi had been reported from horses in Urmia region by Abdollahi. 4 years after that one case of Babesia caballi in horse were reported from Shiraz (Seifi et al., 2000). 3 blood smear among 85 blood samples that had been taken from horses in Urmia were infected by Babesia equi in 1998, and also there was a simultaneously infection by Babesia caballi and Babesia equi in a 3 years racing foal in 2000 in Mashhad (Seifi et al., 2000), in 2006 Rasuli et al. had shown that 7 % and 1% of horses in Urmia were infected by Babesia equi and Babesia caballi respectively. In Mongolia were infected 72.8% and 40.1% of all Horse serum samples were positive for B.equi and B.caballi infections, respectively (Damdinssuren, 2004). Result of current investigation is in accordance with the other investigation in Iran. Moreover there were 2 reported from Turkey in 2001 and 2007 that Babesia equi had been reported as a cause of Babesiosis in horses of Turkey (Altan et al., 2003 and Aypak, 2007). According to these results we can say that prevalence of Babesiosis in horse of Meyaneh area is high and its need to proper prevention and treatment policy (Kirkhan, 1996 and Vial et al., 2006).

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References

- Akkan Hasan, A., Karaca, M., Tutuncu, M., Deger, S., Keles, I., Agaoglu, Z., 2003. Serologic and microscopic studies on Babesiosis in horses in the Eastern border of Turkey. J. Equ. Veter. Sci., 23(5), 181-183.
- Aypak, S., 2007. Detection of babesia (Theileria) equi (Laveran, 1901) in Horses the Kars Province of Turkey. Turk. paraz. Derg., 31 (3),170-172.
- Damdinssuren, B., 2004. Epidemiological study of equine piroplasmiasis in Mongolia. Veter. Parasitol., 127, 29–32.
- Don, P., Knowles, Jr., 1996. Control of babesia equi parasitemia. Parasitol.Today., 12(5), 195-198.
- Holbrook, A.A., 1998. Equine piroplasmiasis Intraerythrocytic development of Babesia caballi (Nuttall) and Babesia equi (Laveran). Amer. J. Veter. Res., 29, 297-303.
- Kirkhan, W.W., 1996. The treatment of equine babesiosis. Journal Amercian. Vet. Med. Ass., 155, 457-460.
- Rubino, G., Cito, A.M., Lacinio, R., Bramante, G., Caroli, A., Pieragostini, E., Petazzi, F., 2006. Hematology and some blood chemical parameters as a function of tick-borne disease (TBD) signs in horses. J. Equ. Veter. Sci., 26(10), 475-480.
- Seifi, H.A., Mohri, M., Sardari, K., 2000. A mixed infection of babesia equi and babesia caballi in a racing colt: A report from Iran. J. Equ. Veter. Sci., 20 (12), 858-860.
- Saunders., 1997. Equine Babesiosis, In Veterinary Medicine, 8th ed, London., 1171-1179.
- Soulsby, E.J.L., 1982. Babesia of Horses In Helminths, Arthropods and Protozoa of Domesticated Animals, Lea and Febiger Inc, 7th ed, 1982, Philadelphia., 719-723.
- Tenter, A.M., Friedhoff, K.T., 1986. Serodiagnosis of experimental and natural Babesia equi and B.caballi infections. Veter. Parasitol., 20(1-3), 49-61.
- Vial, H.J., Gorenflot, A., 2006. Chemotherapy against babesiosis. Veter. Parasitol., 138(1-2), 147-160.