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Zoonotic Babesiosis- A Growing Concern in Blood Transfusion

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Abstract

A common vector borne disease in animals has become a threatening zoonotic disease in man that has even taken transmission through blood. So a growing concern has been pointed out briefly in this paper.

Keywords: Babesiosis; Zoonosis; Blood transfusion

Introduction

Babesiosis is a zoonosis caused by vector borne, intra erythrocytic protozoa of the *Phylum Apicomplexa* transmitted to hosts primarily by tick vector. The disease mostly occurs in the USA, but cases have also been reported in several European countries, in Egypt, India, Japan, Korea, Taiwan, and South Africa. Cattle tick fever and red water fever are common conditions in animals but Babesia spp. have recently emerged as a growing public health concern for humans in many parts of the world. The main pathological event is lysis of erythrocytes resulting in hemolytic anemia, which in severe cases may lead to organ failure and death, particularly in immune compromised patients. The two groups of parasites involved, Babesia microti-like and Babesia sensustricto (s.s.) species, are very much different in their life cycle and susceptibility to anti babesial drugs.

Though there are effective measures to prevent the disease, infection from blood transfusion is particularly difficult to prevent. More over increasing deer populations, wider distribution and greater abundance of ticks are important in causing a major hike in disease occurrence. The growing numbers of immune compromised patients and closer proximity of man-animal habitats also have increased the number of cases. Though previously unreported or under reported, improved medical awareness has resulted a hike in the number of reported cases.

The three major types of Babesia involved in human Babesiosis are *B. microti, B. divergens* and *B. duncani*. The routes of transmission are vector borne (*Ixodid tick*), congenital and through blood transfusion. The nymphs and adult of ticks commonly known as deer tick or black legged tick (*Ixodes scapularis*) are the main vectors of B. microti. The white-footed mouse (*Peromyscus leucopus*), serves as the reservoir host for the parasite. The white-tailed deer (*Odocoileus virginianus*), acts as a maintenance host for adult ticks and there by transports the infected ticks to previously uninfected areas. Cattle are the definitive hosts for B. divergens and Roe deer seems to be the wild reservoir host.

In the last three decades there was tremendous increase in the reported cases of transfusion transmitted Babesiosis caused by *B. microti*. The major risk factor is the asymptomatic donors and lack of a sensitive and specific test to detect the parasite in the erythrocytes of the donors. Incubation period in both natural and transfusion transmitted are same as one to nine weeks. There are reports of Babesiosis in recipients of solid organ transplants (renal and cardiac). The transmission of babesia has occurred during blood transfusion in these cases [1].

There is wide spectrum of diseases that follows Babesia infection which vary from asymptomatic to extremely fatal as in the case of immune compromised and aged patients. The common symptoms noticed are fever, drenching sweat, head ache, chills, myalgia, malaise and hemolytic anemia. Infected animals show varying clinical symptoms such as anorexia, high fever, coffee colored urine and recumbency in severe cases leading to death.

Early diagnosis is the best way to save the patients. In acute cases ring shaped trophozoites can be seen in the peripheral blood smear stained by Geimsa or Wright stain in the erythrocytes or even extra cellular. Serological examination of antibodies in blood plasma, Polymerase chain reaction for

parasitic antigens and animal inoculation are other diagnostic tests. The gold standard for diagnosis of *B. microti* is indirect immune fluorescent antibody test (IFAT) to detect Ig G and Ig M antibodies to this organism [2].

References

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