First Case of Anaplasma (Ehrlichia) platys Infection in a Dog in Turkey

Bülent ULUTAŞ1-*, Göksel BAYRAMLI1, Tülin KARAGENÇ2
1Department of Internal Medicine, Faculty of Veterinary Medicine, Adnan Menderes University, 09016 Aydın - TURKEY
2Department of Parasitology, Faculty of Veterinary Medicine, Adnan Menderes University, 09016 Aydın - TURKEY

Received: 17.10.2005

Abstract: A male pinscher dog weighing 4.2 kg with a history of intermittent fever, inappetence, weight loss, and weakness occurring periodically for 5 months showed Anaplasma (Ehrlichia) platys inclusions within the platelets of peripheral blood smears. The diagnosis was confirmed using a nested polymerase chain reaction. The dog was treated with doxycycline at a dose of 5 mg/kg twice daily for 21 days. This study is the first case of A. platys infection in Turkey.

Key Words: Anaplasma platys, inclusion, dog, Turkey

Case History

A 6-year-old, male pinscher dog weighing 4.2 kg was brought to the Small Animals Clinic of the Veterinary Faculty of Adnan Menderes University with a history of intermittent fever, inappetence, weight loss, and weakness occurring periodically for 5 months. The dog had been severely infested with ticks during the summer. According to the owner, the dog had been seen by a local veterinarian for the intermittent fever, but the origin

* E-mail: bulutas@adu.edu.tr
could not be determined. Intramuscular gentamicin at a
dose of 4 mg/kg was given to the dog by the veterinarian.
On the day of presentation, the dog appeared to be
depressed and emaciated. The physical examination also
revealed weakness, peripheral lymphadenopathy, pale
mucosal membranes, and a normal rectal temperature
(38.3 °C). In the abnormal haematological findings,
packed cell volume was 20.8% (normal range 37%-55%), red blood cell (RBC) count was 3.05 × 10^{12} RBCs/l
(normal range 5.50-8.50 × 10^{12} RBCs/l), white blood cell
(WBC) was 33.2 × 10^9 WBCs/l (normal range 5.00-
17.00 × 10^9 WBCs/l), platelet (PLT) count was 80 × 10^9
PLTs/l (normal range 200-500 × 10^9 PLTs/l), and mean
platelet volume was 12.9 fl (normal range 5.6-9.1 fl).
Results of serum biochemical analyses indicated low
glucose (2.7 mmol/l; normal range 3.4-6.0 mmol/l) and
albumin (21 g/l; normal range 25.8-39.7 g/l), and high
globulin (59 g/l; normal range 20.6-37.0 g/l)
concentrations. Aspartate amino-transferase (55 U/l;
normal range 8.9-48.5 U/l) and alkaline phosphatase
activities (120 U/l; normal range 10.6-100.7 U/l) were
slightly increased. Examination of blood smears revealed
the presence of A. platys basophilic inclusions in platelets
alone or clusters (Figure 1a-d). Only 9% of blood
platelets contained such inclusions. Some of these
infected platelets were larger than some of the
erthrocytes (Figure 1c,d). A nested PCR was performed
using EDTA-anticoagulated peripheral blood taken from
the cephalic vein in order to confirm the presence of
Anaplasma platys in the dog. DNA was extracted
following the Wizard genomic DNA isolation kit
(Promega, USA). A primer set, S8FE (5' - GGA ATT CAG
AGT TGG ATC MTG GYT CAG -3') and B-GA1B (5' - CGG
GAT CCC GAG TTT GCC GGG ACT TCT -3'), which
amplify the 16S rRNA gene (11), was used in the first
round of PCR. This was followed by the second round
PCR using an A. platys-specific primer PLATYS-F (5' - AAG
TCG AAC GGA TTT TTG TCG TAG CTT -3) (12) with
some modification and an Ehrlichia genus-specific primer
HE3 (5-CTT-ATT-ATT-CCA-TGC-TGC-AG-3) (13). PCR
conditions were as described previously (12,13).

The dog was found to be free of other blood parasites
(Hepatozoon canis, Haemobartonella canis, Babesia spp.
and E. canis) upon examination of Giemsa-stained blood
smears. Leishmania antibodies, as determined by IFAT,

Figure 1a-d. Basophilic inclusions of A. platys within the platelets on peripheral blood smears from a dog.
were also absent. The dog was given 5 mg/kg doxycycline (Monodox, Deva) twice daily for 21 days and responded to the treatment within 48 h. No inclusions were determined in blood platelets upon microscopic examination of the smears during the second day’s examination. The dog’s condition continued to improve and the animal showed an improved tolerance to exercise and an increased appetite, but had mild anaemia 21 days after the treatment. Bodyweight had increased to 4.7 kg. Therefore, haematological and biochemical analyses were performed for 16 weeks for a possible relapse. Moreover, the thrombocytopenia determined before treatment was no longer observed.

Results and Discussion

Although canine A. platys infection in Turkey has been demonstrated by nested PCR before, there have not been any clinical case reports of A. platys infection in dogs. Thus the pathogenesis of A. platys in Turkey is unknown. In this study, we found direct evidence of A. platys infection in a dog in the west Aegean region in Turkey by demonstrating inclusions of the agent on blood smears. The DNA of the agent was also analysed to confirm the A. platys infection in the dog. To detect A. platys inclusions on the smears of peripheral blood is known to be difficult and time consuming, because inclusions usually occur transiently and in low numbers (2). Inokuma et al. (6) demonstrated that 1 of 6 A. platys infected dogs had inclusions in peripheral blood platelets and 5% of the platelets had such inclusions. On the day of presentation, in the dog described here, 9% of the platelets had inclusions. Acute A. platys infection is characterised by a parasitaemia of platelets followed by episodes of thrombocytopenia that occur cyclically at 7- to 14-day intervals (1). Most reports have indicated that infected dogs are generally not affected clinically and rarely show signs of significant haemorrhage even with platelet counts as low as $20 \times 10^9$/l or less. Within a few days the platelet count begins to rise again to normal levels only to fall again 1 to 2 weeks later (14). In the present case, according to the history, the dog had shown some of the clinical symptoms such as intermittent fever, weakness, and inappetence and transient recovery 4 times in 5 months, periodically. In accordance with previous reports (1,3-5), marked thrombocytopenia was determined in this case before the treatment. Furthermore, anaemia—a non-specific finding for A. platys infection—was also determined. This situation could be explained by the chronic inflammatory condition as reported previously (8,15). In conclusion, this is the first case of A. platys infection in a dog in Turkey.

References


