

A Case of the Drug-Induced Hemolysis: Non-Immune Mediated Hemolytic Anemia by Cefotaxime

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Drug-induced hemolytic anemia have been described in patients with penicillin or cephalosporin, and can result in renal failure, disseminated intravascular coagulopathy, and death. Most of these cases are related to immune-mediated conditions. Cefotaxime is a third-generation cephalosporin with wide spectrum of activity against both Gram positive and Gram negative bacteria.

A 10 years-old male chihuahua dog with hindlimb ataxia after traffic accident was referred to Veterinary Medical Center in Chungbuk National University. In radiographic examination, luxation of thoracic vertebra was identified between 12th and 13th. The patient received cefotaxime (cefotaxime[®], Hawon pharm) 50mg/kg IV TID after surgical treatment of the luxation. On the 3rd and 4th day of post-operation, severe hemolysis and PCV diminishing were observed in the patient. Because any other causes of hemolysis were ruled out, this case was diagnosed tentatively as a cefotaxime-induced hemolytic anemia. After the change of antibiotic, hemolysis was completely disappeared on seven post-operative day. For the confirmation of cause of hemolysis, cefotaxime-coated patient's RBC was incubated with patient's hemolytic serums (no treated serum or heated serum at 57°C for 30min) and healthy beagle's whole bloods were incubated with serial concentrations of ampicillin, cefotaxime, gentamicin, trimethprim-sulfonamide.

The first experiment using a cefotaxime-coated patient's RBC showed that the hemolysis was not happened in both. It means to happen non immune-mediated hemolysis in the patient. The second experiment using a healthy beagle's RBC showed the hemolysis of RBC by high dose ampicillin and cefotaxime. Although the doses of antibiotics showing the hemolysis have not been used in clinical purpose, this result suggest the possibility of non immune-mediated hemolysis by antibiotics in the patient that have structural defect of RBC. The additional research of the RBC in this case will be needed for the confirmation of the possibility of any defect.

In general, immune-mediated disease, blood-borne parasites, oxidative injury are considering as a major causes of hemolysis in veterinary clinics. But if the patient have received the high dose antibiotics, drug-induced non immune-mediated hemolysis will be also considered.

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