14692 P

Bartonellosis: A Cause of Severe Anemia in Splenectomized Dogs.

DAVID T. CARR AND HIRAM E. ESSEX.

From the Division of Experimental Medicine, Mayo Foundation, Rochester, Minn.

Although bartonellosis is a common complication following splenectomy of rats, it rarely occurs among splenectomized dogs. We have found only 12 reports in the literature dealing with this disease in dogs including the original report by Kikuth.[1] For this reason, and because we had difficulty in accounting for the development of severe anemia in one of our dogs, it seemed worth while to record the first case in the dog to be recognized in this laboratory. We are not aware of a previous report from the western two-thirds of the United States.

Report of Case. Dog 1 was an apparently healthy female which was being used in a study of the effect of pentobarbital sodium anesthesia on the concentration of hemoglobin before and after splenectomy. On December 3, 1943, the concentration of hemoglobin was 15.3 g per 100 cc of blood. On December 8, 1943, its spleen was removed. The animal apparently recovered from the operation satisfactorily and on December 28, 1943, the concentration of hemoglobin was 13.0 g per 100 cc of blood. By January 24, 1944, the concentration of hemoglobin had dropped to 5.4 g per 100 cc of blood without any obvious reason. Dr. George M. Higgins, who had studied bartonellosis in rats, suggested that bartonellosis might be the cause of the anemia. Examination of stained (Giemsa) smears of blood revealed the characteristic pleomorphic organisms associated with the erythrocytes. The organisms varied from single coccoid forms to beaded and filiform rods and were apparently *Bartonella canis* (Fig. 1). Because of this finding a tentative diagnosis of bartonellosis was made. The concentration of hemoglobin of the dog's blood continued to decrease until on March 9, 1944, it was only 1.8 g per 100 cc. After this there was a spontaneous improvement and by March 30, 1944, the hemoglobin had increased to 7.9 g per 100 cc of blood. However, stained

1 Kikuth, W., *Klin. Wchnschr.*, 1928, **7**, 1729.

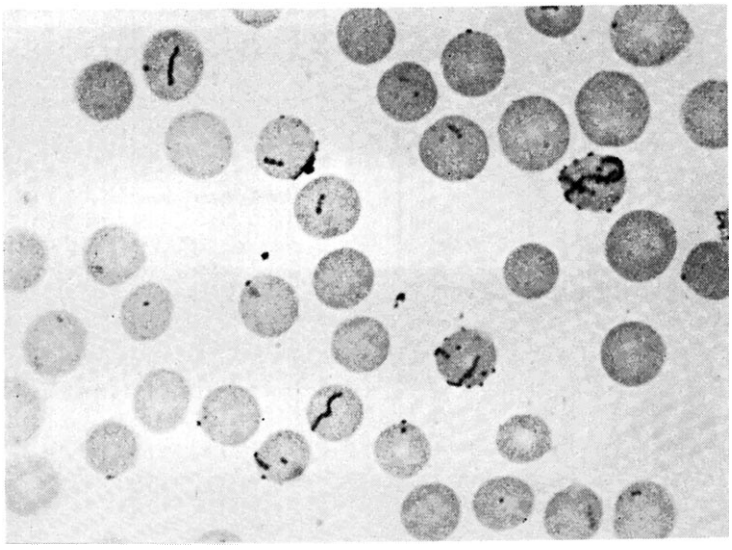

FIG. 1.
Giemsa stained blood smear showing the pleomorphic *Bartonella canis* organisms associated with the erythrocytes.

smears of the blood continued to show *Bartonella canis.*

On February 5, 1944, Dog 2 was inoculated with 5 cc of whole blood taken from Dog 1. On that date the concentration of hemoglobin was 11.6 g per 100 cc of blood. Previous studies of stained smears of the blood of this animal had not revealed *Bartonella canis.* On February 9, 1944, the dog's spleen was removed. Stained blood smears and the concentration of hemoglobin were studied at weekly intervals. On March 3, 1944, the erythrocytes showed Bartonella bodies and by March 30, 1944, the hemoglobin had decreased to 7.4 g per 100 cc of blood. The hemoglobin continued to decrease and on April 20, 1944, the concentration was only 3.2 g per 100 cc of blood.

Dog 3, which had been splenectomized on September 5, 1939, was inoculated with 5 cc of whole blood from Dog 1 on March 3, 1944. The results were similar to those obtained in the case of Dog 2 and need not be recorded in detail.

The demonstration of organisms that had the morphologic characteristics of *Bartonella canis,* the transmission of the infection to other dogs with resultant anemia, and the demonstration of the organisms in their blood confirmed the diagnosis of spontaneous bartonellosis.

Summary. After splenectomy had been performed on a dog severe anemia developed and stained smears of the blood revealed organisms that had the morphologic characteristics of *Bartonella canis.* The disease was transmitted to two other dogs, confirming the diagnosis of bartonellosis.

14693 P

Effect of Intravenous Injection of Trypsin on the Blood Coagulation Time in Hemophilia.

HENRY J. TAGNON. (Introduced by George R. Minot.)

From the Thorndike Memorial Laboratory, Second and Fourth Medical Services (Harvard). Boston City Hospital, and the Department of Medicine, Harvard Medical School, Boston, Mass.

Suitable quantities of trypsin will reduce to normal, *in vitro,* the prolonged clotting time of hemophilic blood.[1] The intravenous injection of trypsin into a hemophilic patient has never been attempted, chiefly because experiments on animals have shown that trypsin is toxic and causes intravascular coagulation.[2,3]

However, the toxicity of trypsin is greatly reduced by injecting it slowly. Thus, crystalline trypsin*[4] dissolved in 200 to 300 ml of physiological saline was injected intravenously into 3 hemophilic patients and its effect on the coagulation time observed.

The coagulation time was measured at 37°C on duplicate samples of 2 ml of blood in chemically clean test tubes, 9 to 10 mm in diameter, previously rinsed with physiological saline. The end point is reached when the tube can be completely inverted without spilling the blood.[5]

The results (Table I) show that a significant shortening of the coagulation time followed the injection of 300 mg of trypsin in 19 minutes and of 325 mg in 20 minutes respectively in 2 different hemophilic patients. The coagulation time returned to the initial value after one hour. Observation 11 (Table I) shows that no effect on the coagulation time

1 Tyson, L. T., and West, R., PROC. SOC. EXP. BIOL. AND MED., 1937, **36**, 494.

2 Rocha E Silva, M., *Arch. Path.,* 1942, **33**, 387.

3 Tagnon, H. J., *J. Clin. Invest.,* in press.

* Obtained from the Plaut Research Laboratories, Bloomfield, N.J. This preparation contains about 80% magnesium sulphate.

4 Northrop, J. H., *Crystalline Enzymes,* Columbia University Press, 1939, page 135.

5 Patek, A. J., and Stetson, R. P., *J. Clin. Invest.,* 1936, **15**, 531.