Increased Fibrinolytic Split Products in Normal Dog Serum[1] (36052)

CHARLES A. OWEN, JR., HERBERT A. COOPER, AND E. J. WALTER BOWIE
Mayo Clinic and Mayo Foundation, Rochester, Minnesota 55901

The simplicity of the staphylococcal clumping test (1) for assaying fibrinolytic split products in serum has led us to abandon the red cell hemagglutination-inhibition test (2, 3) as a routine procedure. The results of the two tests regularly yield comparable values in human serum (4). However, when we measured split products in serum from dogs, normal values with the staphylococcal clumping test were found to range from about 20 to more than 200 μg/ml. Normal human serum contains 9 μg/ml or less as measured by the staphylococcal test and 6 μg/ml or less by the red cell hemagglutination-inhibition test.

Since the mechanism of action of the staphylococcal test is unknown, artifacts in dog serum might be responsible for the high normal values. Therefore, the staphylococcal clumping test was compared with the red cell hemagglutination-inhibition test in the serum of normal dogs.

Methods and Materials. Twenty-one normal mongrel dogs were randomly sampled. None had been used for experimental purposes; all had received the routine prophylactic treatment given to all new dogs. Blood (3 ml) was collected in tubes containing 2 mg of soybean trypsin inhibitor. The blood was allowed to clot spontaneously at room temperature for 2 hr; then, 0.1 ml of bovine thrombin (100 units) was added and the serum was harvested after centrifugation.

The staphylococcal clumping test was performed exactly as is done with human serum (1). The red cell hemagglutination-inhibition test (2) was adapted to canine reagents. Washed, formalinized, canine erythrocytes were coated with normal canine plasma diluted so that the fibrinogen concentration was 1 mg/ml. Antidog-fibrinogen rabbit serum was prepared by injecting purified dog fibrinogen (5) in Freund's complete adjuvant to rabbits over an 8-week period. The test dog serum was absorbed with formalinized (but untanned and uncoated) canine erythrocytes before testing (the main deviation from the standard human test). The absorbed serum was mixed with antifibrinogen serum and then with the coated red cells, and agglutination was measured in the usual way.

Results. Serum from apparently healthy dogs contained a mean of 113 μg/ml split products by the staphylococcal clumping test

TABLE I. Fibrinolytic Split Products (FSP) in Serum from 21 Normal Dogs.

Dog	FSP (μg/ml) by: Red cell hemagglutination-inhibition	Staphylococcal clumping
1	5	160
2	5	160
3	10	80
4	10	160
5	20	40
6	20	80
7	20	80
8	40	20
9	40	80
10	40	80
11	40	80
12	40	160
13	80	80
14	80	80
15	80	160
16	80	160
17	80	160
18	160	80
19	160	160
20	160	160
21	320	160
Mean	71.0	113.3

[1] This investigation was supported in part by Research Grants HE-12512 and HE-13145 from the National Institutes of Health, Public Health Service.

and 71 μg/ml by the red cell hemagglutination-inhibition test (Table I).

Discussion. Our initial concern that the staphylococcal clumping test was invalid in dogs because of the high titer of fibrinolytic split products in normal animals seems unwarranted. The immunologically specific red cell hemagglutination-inhibition test gave an average result within one dilution of that by the staphylococcal test, just as it does with human serum. No ready explanation for such active fibrinolysis in dogs is at hand.

Summary. Fibrinolytic split products were measured in the serum of 21 normal mongrel dogs. The mean concentration of the split products was 113 μg/ml by the staphylococcal clumping test and 71 μg/ml by the red cell hemagglutination-inhibition test. The staphylococcal clumping test seems to be as reliable in dog serum, with its high levels of split products, as it is in human serum.

1. Leavelle, D. E., Mertens, B. F., Bowie, E. J. W., and Owen, C. A., Jr., Amer. J. Clin. Pathol. **55**, 452 (1971).

2. Mertens, B. F., McDuffie, F. C., Bowie, E. J. W., and Owen, C. A., Jr., Mayo Clin. Proc. **44**, 114 (1969).

3. Merskey, C., Kleiner, G. J., and Johnson, A. J., Blood **28**, 1 (1966).

4. Leavelle, D. E., Bowie, E. J. W., Mertens, B. F., McDuffie, F. C., and Owen, C. A., Jr., J. Lab. Clin. Med. **77**, 993 (1971).

5. McFarlane, A. S., J. Clin. Invest. **42**, 346 (1963).

Received July 29, 1971. P.S.E.B.M., 1971, Vol. 138.