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The blood fibrin in canine anaphylaxis.

EDWIN W. SCHULTZ and GLADYS NEWNAN.

[*From the Department of Bacteriology and Experimental Pathology, Stanford University, California.*]

Attention[1] was called to the fact that the delay or loss of the coagulability of the blood in canine anaphylaxis is apparently due to a reduction in the number of blood platelets, resulting in a reduction in the amount of thromboplastin necessary for the formation of a coagulum. With this in mind it was found possible to make a quantitative study of the blood fibrin by means of the simplified technique of Foster and Whipple[2] plus the addition of a thromboplastic agent to the clotting solution. This was supplied either in the form of a suspension of platelets, prepared as indicated in the previous paper,[1] or of a commercially prepared thromboplastin (Squibbs). Since the latter was the most convenient, this was generally used. The commercial product was filtered through a Gooch filter and was added in uniform quantities, 1 or 2 cc., to the clotting solution into which the oxalated plasma had been discharged. All the plasma samples, including the normal, from a given animal were treated in the same manner.

The animals were sensitized to horse serum, 0.3 cc. per kilo subcutaneously, and the shocking dose, 1 or 2 cc. per kilo of animal weight, was administered by intracardial injection. Anaphylaxis in dogs so injected almost invariably terminates fatally and marked pulmonary fixation, generally considered uncommon in canine anaphylaxis, is frequently observed at autopsy together with the hepatic congestion. The blood samples were also obtained by cardiac puncture.

Our results show that as a rule there is a well marked decline in the fibrin values immediately after the drop in blood pressure. The initial abrupt decline is generally followed by a more gradual one of variable duration. In animals which live sufficiently long, a gradual shift towards the normal level generally becomes evident. It is noteworthy that corresponding to the initial drop in

[1] Schultz, E. W., PROC. SOC. EXP. BIOL. AND MED., 1925, xxii, 343.

[2] Foster, D. P., and Whipple, G. H., *Am. J. Physiol.*, 1922, lvii, 365.

Dog No.	Normal values		Fibrin and Hematocrit Values during Shock.													
	Fibrin mg.	Cells	Time in minutes	Fibrin mg.	Cells	Time in minutes	Fibrin mg.	Cells	Time in minutes	Fibrin mg.	Cells	Time in minutes	Fibrin mg.	Cells	Thrombo-plastic agent	Time of death; minutes
59	354	43.0	3.0	240	46.0	7.0	182	53.7	10.0	263	54.0				Pl.	15
64	605	41.0	8.0	459	48.0	10.0	427	46.0	16.0	518	44.0				Pl.	120
69	477	49.5	4.5	209	53.0	9.0	144	49.5	13.0	168	51.0	17.0	185	50.0	1 cc. Th.	17
71	463	46.5	7.0	282	65.0	11.5	235	64.5							2 cc. Th.	12
72	540	46.0	5.0	329	56.0	10.0	303	62.5	26.0	531	50.0	70.0	516	43.5	2 cc. Th.	85
80	637	49.0	6.5	410	63.0	15.5	394	65.5	33.0	430	62.5	75.0	380	57.7	1 cc. Th.	85
82	772	51.5	10.0	359	63.0	13.0	348	63.5	22.0	345	63.2				1 cc. Th.	23
84	940	53.0	6.0	326	72.2	10.0	245	76.5							2 cc. Th.	26
85	745	55.0	14.0	630	64.7	19.0	585	66.0							2 cc. Th.	28
89	762	55.0	4.5	621	59.0	15.0	604	58.7	30.0	546	59.5	45.0	577	56.7	2 cc. Th.	65

Pl. = platelets. Th. = thromboplastin (Squibbs).

the fibrin there is a well defined rise in the hemotocrit values, frequently from 10 to 20 per cent above the normal. The maximum hematocrit readings are generally attained by the tenth minute (average on thirty dogs in fatal shock), immediately following which the fibrin generally reaches its lowest level. This would suggest that the drop in fibrin is probably due to an escape of plasma proteins incident to the increased permeability of the capillary endothelium recognized in anaphylaxis, although the possibility of its partial destruction cannot be excluded.

The following table illustrates the points in question. The fibrin is expressed in milligrams per 100 cc. of blood; the hematocrit (cells) in per cent.

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The blood platelets in canine anaphylaxis.

ALBERT P. KRUEGER and EDWIN W. SCHULTZ.

[*From the Department of Bacteriology and Experimental Pathology, Stanford University, California.*]

It is well recognized that in canine anaphylaxis the blood generally becomes incoagulable, often remaining fluid for days. This loss of coagulability of the blood has been attributed to an excess of antithrobin or to a diminution of thromboplastin. Recently one of us noted,[1] in connection with studies on the blood fibrin in canine anaphylaxis, that the addition of a small quantity of platelets to the clotting solution, into which the oxalated anaphylactic plasma had been discharged, induced prompt coagulation in samples which otherwise (in controls) remained uncoagulated for hours, sometimes for days. This suggested the desirability of making platelet counts. While a diminution in the platelets in anaphylaxis has been reported,[2, 3] we were especially interested in the counts obtained in fatal canine anaphylaxis, particularly since changes in the coagulability of the blood are more prominent in the dog than in other animals.

[1] Schultz, E. W., PROC. SOC. EXP. BIOL. AND MED., 1925, xxii, 343.

[2] Archard, Ch., and Ayanud, M., *Compt. rend. Soc. de biol.*, 1909, lxvii, 83.

[3] Pesci, E., *J. de physiol. et path. gen.*, 1921, xix, 242.