

with corresponding non-heparinized solutions as controls, were analyzed for calcium by the Clark-Collip modification of the Kramer-Tisdall method.

Dogs' blood served as the source of plasma and serum. All reagents were tested and found to be calcium-free. A microburet whose outlet was ground and fitted with a hypodermic needle was used for titration.

The recovery on calcium chloride solutions was 99.64%. Ten determinations on redistilled water containing 100 mg. % of heparin gave a mean calcium value of 1.170 mg. %. Twenty-seven determinations on calcium chloride solutions containing 10 mg. of calcium in each 100 cc. and on calcium chloride solutions containing, in addition, 100 mg. % of heparin, gave mean values of 9.964 and 11.134 mg. % of calcium, respectively, the difference being 1.170. Control serum and heparinized serum gave means of 10.503 and 11.969 mg. % of calcium, respectively, in a series of 52. The difference is 1.466 mg. % of calcium. Fifty determinations on serum and corresponding heparinized plasma gave calcium values of 10.516 and 11.683 mg. %, the difference being 1.167 mg. in favor of the plasma.

It is concluded that calcium in heparin is precipitable as oxalate.

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Platelet Count After Splenectomy and Other Operations.

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Steiner and Gunn¹ demonstrated that splenectomy in normal rabbits was followed by a constant increase in the number of circulating blood platelets. Other operations on rabbits, involving a similar degree of trauma, were also followed by an increase of platelets, which did not differ in time of occurrence, degree or duration from the increase observed after splenectomy. They believed that the degree of rise depended upon the amount of trauma sustained during operation.

These results, though applicable to the rabbit, do not apply to man. It is generally agreed that in humans, the marked increase in

¹ Steiner, P. E., and Gunn, F. D., *Proc. Soc. Exp. Biol. and Med.*, 1931, **28**, 1088.

the number of platelets after splenectomy is due to the removal of the spleen and not to other surgical measures involved.² Evans,³ and many other observers before him, demonstrated an abrupt rise in the number of platelets to a high level, beginning within a few hours after splenectomy. Others^{4, 5} found that platelets often increased after other operations, but seldom, if ever, to such high levels as after splenectomy. The increase in number, furthermore, was delayed until about the sixth day after operation.

The following observations were made to emphasize the differences in the immediate response of platelets after splenectomy and after other surgical procedures in the human. An accurate method, elsewhere described,⁶ was used for the counting of platelets. Counts were made before, and several times after operation in each case. The results are plotted in Fig. 1.

Cases 1 and 2 suffered from cirrhosis of the liver. Splenectomy was performed in both because of enlargement of the organ and for the relief of ascites. In both cases, the platelets beforehand were only moderately diminished. In both cases, the number of platelets increased nearly 50% within 2 hours after splenectomy

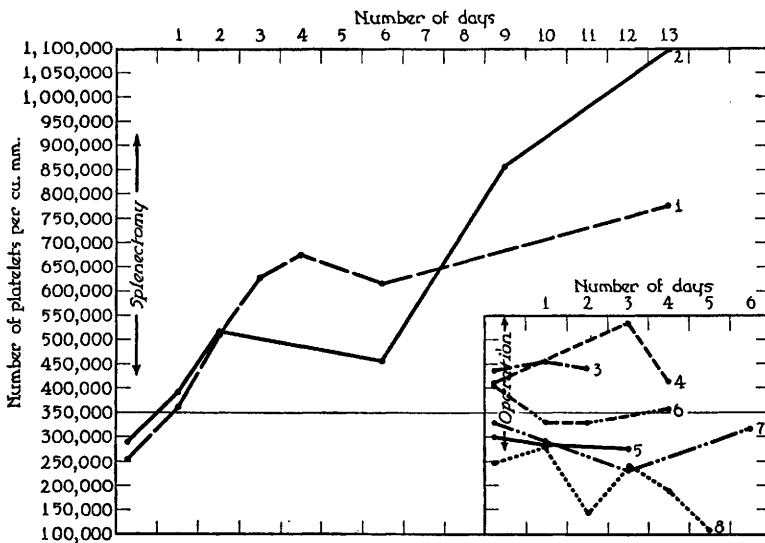


FIG. 1.

² MacKay, W., *Quart. J. Med.*, 1931, **95**, 285.

³ Evans, W. H., *J. Path. and Bact.*, 1928, **31**, 815.

⁴ Aynaud, M., *Comp. Rend. de la Soc. de Biol. Paris*, 1913, **74**, 373.

⁵ Dawbarn, R. Y., Earlam, F., and Evans, W. H., *J. Path. and Bact.*, 1928, **31**, 833.

⁶ Reimann, H. A., *J. Exp. Med.*, 1924, **40**, 553.

and continued to increase rapidly until the maximum number was reached on the thirteenth day in Case 2. These curves agree with the results obtained by practically all who have made similar observations.

Cases 3 to 8 were operated upon for other purposes. The record of the platelet counts in these cases is also illustrated in Fig. 1. It is evident that the striking increase which is observed after splenectomy does not occur. In fact, in 4 cases, the platelets diminished, as they do after many other procedures and conditions.² A decrease is noted in case 5 (excision of cervical polyp and herniorrhaphy), case 6 (herniorrhaphy), case 7 (herniorrhaphy) and in case 8 (hydrosalpinx, excision of cystic ovary). It is of course possible, if further observations had been made in these cases, that the platelets would have been found increased after the sixth day as in cases observed elsewhere.⁵

A slight, transient increase in the number of platelets occurred in case 3 (cholecystoduodenostomy) and in case 4 (posterior gastroenterostomy after cauterization and eversion of a peptic ulcer).

Conclusion. Increase in the number of platelets after splenectomy or other operations, according to certain observers,¹ appear to be rather constant in rabbits. The behavior of platelets after splenectomy in humans is very different from that after other operations. After splenectomy there is usually an abrupt rise to a high level beginning immediately after operation. After other surgical procedures the variations are inconstant. The number of platelets may decrease or increase.

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Experimental Edema Produced by Plasma Protein Depletion.

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A study was made of the water and chloride metabolism of dogs during the development of low serum protein edema. The sites of deposition of water and chloride were determined by analyses of tissues obtained at autopsy.