

14509

Absence in Lymph of Capillary Permeability Factors in Traumatic Shock.

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It has been postulated by various investigators¹ that in traumatic shock, substances increasing capillary permeability are liberated in the injured tissues. It might be expected that such substances appear in the lymph draining the traumatized region in higher concentration than in blood. In an attempt to demonstrate such factors, canine lymph was collected during shock and tested in rabbits for its effects on capillary permeability.

Shock was produced by vigorous intestinal massage, peripheral circulatory collapse being verified by blood pressure, hematocrit and autopsy observations. Lymph was obtained from a duct lying between the first and second intestinal nodes, prior to massage, and shortly before death during the period of permanently depressed blood pressure (below 70 mm Hg.). Simultaneously femoral vein blood was drawn for plasma and serum samples. Permeability effects were determined in rabbits according to Menkin's method² (intradermal injection of 0.1 cc samples of test fluids, followed by intravenous injection of 2.0 cc per kg of a 1% saline solution of Trypan Blue).

In an initial series of 12 dogs and 15 rabbits, in which heparin was used as anticoagulant, the skin reactions did not show any significant difference between the responses to control and to "shock" fluids: a slight to a marked increase in permeability occurred with each

type of fluid. Heparin controls were negative.

In a second series of 12 dogs and 6 rabbits, in which defibrinated fluids were tested without heparin, again no differences were observed between reactions to control and to shock samples; in these instances the responses were only slight or negative. Similarly, both control and shock fluids caused practically the same degree of extravasation of dye in a third series of experiments using 8 dogs and 8 rabbits, in which the non-protein fractions of lymph and of plasma were compared after the proteins had been removed by acetone precipitation; all reactions again were much weaker than in the first series.

Freeman and Schecter observed recently³ that canine lymph from traumatized limbs had no effect on capillary permeability when re-injected into the skin of the same animals. These investigators obtained the test fluids within a period of 3 hours after traumatization. In the experiments reported here the "shock" samples of lymph and blood were collected only after peripheral circulatory failure had been produced, on an average approximately 9 hours after traumatization. Not only whole lymph and plasma, but also the defibrinated fluids and their non-protein fractions were tested in rabbits for effects on capillary permeability. Even under these conditions, we were unable to demonstrate substances, formed as a consequence of traumatic shock, which increase capillary permeability.

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¹ Recently reviewed in Moon, V. H., *Shock*, 1942, Lea and Febiger, Philadelphia.

² Menken, V., *J. Exp. Med.*, 1936, **64**, 484.

³ Freeman, N. E., and Schecter, A. E., *Proc. Soc. Exp. Biol. and Med.*, 1942, **51**, 29.