

Serum Banks

Blood is volunteered for war emergencies

Ferdy Boll, '44

THE establishment of serum banks, as they are called, has no direct relationship to veterinary medicine, but it has recently become of special interest to veterinary students of Iowa State College. Every student in the Veterinary Division, through the local Jr. A. V. M. A. chapter, has promptly volunteered to donate some of his blood in response to a drive to secure voluntary blood donors to supply these banks.

The establishment of serum banks is an undertaking of the Iowa State Department of Health, in cooperation with national and local public health services, the American Red Cross, and the armed forces. The aim is to place and maintain thirty 500 cc. units of pooled normal human serum in or near strategic places. This serum is available for civilian or war needs of an emergency nature. When used for a civilian, it is understood that five relatives or friends of the patient will volunteer as donors to replace each flask of serum used.

Blood Taken

The blood is drawn by representatives of the State Department of Health at a designated time, and then taken to the Serum Center to be processed. Wasserman and other purity tests are conducted on the blood at the center. The normal serum is withdrawn and then pooled. Danger of hemolytic reaction from agglutinin content is overcome by pooling the serum until the titre has been reduced to a negligible point. The serum is dispensed from the Serum Center in 500 cc. flasks, each complete with a venoclysis set.

Fluid serum is used for blood-volume restoration and for the treatment of burns in exactly the same way as plasma. As a rough rule, 500 cc. of protein fluid is required to restore the blood pressure permanently to normal for every 10-20 mm. of mercury that the blood pressure is reduced below normal. A number of features may disturb this rule, however. The serum has no oxygen carrying power and, therefore, when needed in a large transfusion, one pint in three should be whole blood, to maintain the concentration of corpuscles.

Serum Differs

Serum differs from plasma in that it contains no fibrinogen, it having been precipitated by the addition of calcium salts. The protein content is about seven percent, and as serum contains no citrate, it has greater blood-volume restoring power than citrated plasma. Moreover, it is technically easier to prepare in a sterile state than is plasma, and does not present the difficulty of post-filtration clotting. The yield per donor is approximately 200 cc. of serum per pint of blood. Since only about one-half pint of blood is taken from any one donor, two to three donors are necessary to make a standard bottle of serum. The serum is stored in a cool, dark place. It may be stored in a refrigerator but must then be heated before use.

There are a number of practical advantages to the use of blood plasma or serum over whole blood. In transfusing whole blood it is necessary to obtain a suitable donor, which requires compatibility and

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related to the tumorous condition. The possibility of faulty drenching with some irritant "home remedy" must be considered although the history did not indicate that such was the case.

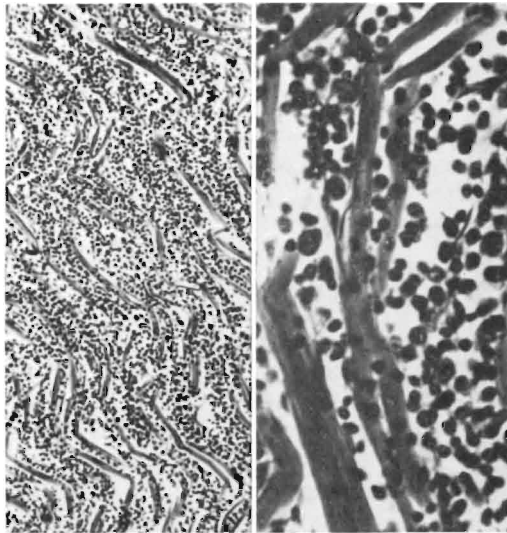


Fig. 2. Photomicrographs showing infiltration of lymphocytes into myocardium; X110 and X410.

This case presented symptoms and lesions of both leukemia and lymphocytomatosis. These conditions are rare in the equine. The blood picture was that of lymphatic leukemia but the nature of the lymphoid hyperplasia did not entirely warrant such a diagnosis since only two of the important nodes of the body were enlarged; yet the spleen and liver were heavily infiltrated with lymphocytes. The numerous tumors were suggestive of lymphocytomatosis. The lesions and symptoms of an intoxication may have arisen from the respiratory and upper digestive tract lesions, the general tumorous condition, or both. Careful consideration of all symptoms and lesions led to a diagnosis of leukemic lymphocytomatosis.

Photomicrographs by Department of Veterinary Pathology, Iowa State College.

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serological tests. These are time-consuming procedures which in emergencies may be significant. The availability of donors is also an important factor to consider, especially in military practice. These difficulties can be removed by the use of plasma or serum. By adequate preparation they may be stored for long periods without deterioration and be ready for instant use. Preliminary typing and compatibility tests are unnecessary because isoagglutinations are partially suppressed by pooling and are further inhibited by the patient's blood.

This article in no way covers the field of serum used in blood-volume restoration. Its purpose is merely to throw a little light on the subject and explain the reason why veterinary students are so whole-heartedly backing the donation of blood at Iowa State College.

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