striking increase in the cholesterol content of the aorta and blood. Three hundred mg of choline hydrochloride daily failed to counteract the effect of cholesterol in the blood, liver or aorta.

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Use of Ascitic Fluid in the Treatment of Primary Shock.

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It has been abundantly demonstrated that the symptoms of primary shock can be relieved by prompt administration of fluid to replace that diverted from the general circulation. Blood is the ideal fluid for this purpose since its protein content prevents too rapid elimination by the kidneys. Of the blood, the serum alone is vital to this action. However, transfusion cannot be performed without time-consuming preliminaries. The ideal fluid for emergency use would, therefore, be some stable, universally compatible protein solution which might be kept on hand at all times. A sterile body transudate would present several advantageous features, in particular the nature of its protein content which is identical with that in blood serum. Ascitic fluid, among the transudates, would be especially desirable since it is elaborated in non-infectious conditions and is available in most clinics in large amounts.

A study of ascitic fluid has been carried out in this laboratory to determine its suitability for this use. Nineteen specimens of ascitic fluid were used, the majority of which were obtained from cases of advanced portal cirrhosis of the liver. All specimens were filtered under aseptic conditions, cultured for sterility and their respective agglutinins determined. Protein and pH determinations were carried out in the usual manner. All fluids were found to be not only sterile but strongly bacteriostatic. The pH was uniformly in excess of 8.65. This was reduced to 7.5 with N 10 hydrochloric acid prior to administration. The protein content ranged from 2.1 to 4.2 mg %. It was found impractical to remove the agglutinins by the classic globulin precipitation method, as dialysis to remove the ammonium sulphate produced too great a dilution. Many of the agglutinins were amenable to destruction by heat—especially the

B agglutinins, others were only temporarily suppressed by this treatment.

The effect of intravenous administration of ascitic fluid was studied in 10 dogs weighing 10 to 15 kg. A basal nembutal anesthesia was employed and, after stabilization of the blood pressure, shock was produced by withdrawal of blood, by trauma or by a combination of hemorrhage and trauma. Twenty minutes following a shock-level drop in blood pressure, an amount of compatible ascitic fluid (1500 cc) sufficient to contain a concentration of protein equivalent to that in 1000 cc of whole blood was slowly administered intravenously. An immediate rise in blood pressure to 90% of the original reading was effected. This was maintained for 2½ hours, at the end of which time the experiment was terminated. Repetition of this experiment, using the animal's own citrated blood in the full amount removed, returned the pressure to the original volume. The use of a 0.9% solution of sodium chloride effected a 68% return which was maintained for only 15 minutes. Following this there was a gradual drop in pressure to the previous shock level associated with diuresis.

The favorable results with ascitic fluid were obtained only when a fluid naturally devoid of agglutinins was used. The use of fluids containing naturally incompatible agglutinins or fluids in which incompatible agglutinins had been temporarily suppressed by heat resulted in an initial restorative effect like that described, followed after several hours by a rapid fall in pressure and death of the animal. Subsequent necropsy of these animals revealed multiple infarctions of lungs and brain. Reinvestigation of the "agglutination suppression" phenomenon showed it to be effective only for human cells. The agglutinating activity of the fluid was retained with respect to dog cells.

Summary. Sterile ascitic fluid of high protein content, free from agglutinins, is of value in combatting artificially produced primary shock in dogs. The effect is immediate and prolonged. The percentage return of blood pressure closely approximates that obtained when whole blood is used.