

the concentration of inulin is between 2 and 12 μg per cc. Two cc of the diluted urine are measured into a test tube, 4 cc of the reagent added and the tube heated in a boiling water bath as previously described for plasma.

In Table I are shown the results of recovery experiments. Measured amounts of inulin were added to blood serum and the removal of glucose and protein carried out as described. Blank determinations were made on each sample of serum. In the case of the urine, the inulin was added in the concentrations shown, and the determinations made directly following suitable dilution. The urine specimen was a highly concentrated one and the blank value was equivalent to 51 mg inulin per 100 cc of undiluted urine.

13483 P

The Nervous Factor in Burns.

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(Introduced by M. B. Visscher.)

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While evidence has been accumulating concerning the importance of a nervous factor in the etiology of traumatic shock,¹⁻³ similar studies of the problem of burns have not been carried out.

A comparison was made of the effects of thermal trauma to one hind leg in control cats and in spinal animals. Transection of the spinal cord at L₁ or T₁₁ effectively eliminated the influence of afferent nerve impulses from the burned leg but left the major vasoconstrictor outflow from the spinal cord intact.

The experiments were performed on 83 adult cats, anesthetized throughout the procedure with pentobarbital sodium. One hind leg was burned with a Bunsen flame for 10 or 15 minutes. The spinal cord was transected about 30 minutes preceding application of thermal trauma. Observations were made of blood pressure (carotid cannula), hemoglobin and specific gravity of whole venous blood,

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¹ O'Shaughnessy, L., and Slome, D., *Brit. J. Surg.*, 1935, **22**, 589.

² Lorber, V., Kabat, H., and Welte, E. J., *Surg. Gyn. and Obst.*, 1940, **71**, 469.

³ Freedman, A. M., and Kabat, H., *Am. J. Physiol.*, 1940, **130**, 620.

(falling drop technique), respiration, body temperature, survival, local fluid loss in the burned limb and pathology.

In control cats, burning resulted in an abrupt rise in arterial pressure from 120 to 160 mm Hg. The blood pressure remained high and only reached the original level after 10 hours. On the other hand, arterial pressure fell sharply in spinal cats during thermal trauma from an initial 90 mm Hg to 60 mm Hg; it was restored in the course of 1.5 hours and then maintained between 100 and 80 mm Hg. While arterial pressure fell quickly to 90 mm Hg as a result of spinal transection alone, without burning it remained at about this level for many hours. The rise in blood pressure from burns in control cats is thus apparently reflex and masks an initial sharp fall due to non-nervous factors.

Of greatest interest was the study of blood concentration by determination of hemoglobin and specific gravity. In control cats, hemoglobin determinations showed that the blood had concentrated 34.5% 30 minutes after the burning and attained a maximum concentration of 44% at 8 hours. Burns in spinal cats resulted in a hemoconcentration of only 14.5% at 30 minutes and a maximum of 32% at 7 hours. Measurement of blood specific gravity gave similar results. In control cats, specific gravity increased 0.0106 20 minutes after the burn and reached a maximum increase of 0.0127. In contrast to this, burns in spinal cats caused an increased specific gravity of only 0.0027 at 20 minutes and a maximum rise of 0.0066. Thus, elimination of the nervous factor decreases the rate and maximum extent of hemoconcentration following burns.

Respiratory rate increased markedly as the result of thermal trauma but since the rise was greater in spinal animals than in controls, the increased rate of respiration cannot be attributed to the nervous factor.

Great variations were noted in survival time following apparently identical thermal trauma. In 24 control cats, survival ranged from 1.5 to 80 hours, with the average 32.5 hours. In 19 spinal cats, average survival following the burn was 40 hours, with a range from 10 to 75 hours. No conclusion can be drawn concerning survival because of the wide range of variation of the individual experiments.

Local fluid loss was measured by comparing the weights of the normal and burned hind quarters. Local fluid loss averaged 2.5% of the body weight in controls and 1.5% in spinal cats.

Gross pathology was similar in incidence and severity in control and spinal animals. Most of the cats showed pulmonary and renal congestion and dark bloody bladder urine. Other frequent lesions

were subendocardial hemorrhages in the left ventricle, and acute hemorrhage or ulceration in the pylorus or duodenum. Pleural effusion, ascites, congestion and edema of the intestines were never observed and pericardial effusion was very infrequent.

The decrease in hemoconcentration resulting from removal of the nervous factor may perhaps be accounted for on the basis of elimination of the reflex rise in arterial pressure, contraction of the spleen and vasoconstriction. Filtration of fluid into the burned skin is apparently decreased by functional deafferentation.

13484 P

On Infectious Mononucleosis.

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In the spring of 1941, during the occurrence of an epidemic of infectious mononucleosis, we attempted to isolate a transmissible agent from sterile Berkefeld filtrates of nasal washings and whole blood by inoculation into the chorio-allantoic membrane of the chick embryo. Material was obtained from patients who gave a characteristic history, blood picture, and whose heterophile antibody titers ranged from complete agglutination of 160 to a high of 2560. We also attempted passage from patients whose clinical history and leucocyte picture were typical and who later gave heterophile agglutinations in the range mentioned. The nasal washings and blood from some patients were frozen for 12 hours before they were used. Two additional cases made their appearance this fall. In all, a total of 8 attempts was made to transmit the agent from 8 cases; positive results were obtained from 4. The sterile filtrate, when inoculated onto the membrane, showed small pearl-gray reactions with a spreading cloudiness about them. This reaction occurred after the third to the fifth day of inoculation and continued to grow until the membranes were harvested for study. Of 66 membranes which were inoculated with sterile nasal washings, 19 showed positive reactions. Of 30 membranes inoculated with whole blood, 13 showed positive reactions. Cultures from all infective membranes were bacteriologically sterile. Nasal washings and blood from 2 normal individuals were negative. Microscopically, the positive membrane showed an ectodermal proliferation and heavy monocytic cell infiltration. Although special