

6133

Effect of Macerated Kidney on the Mitotic Rate of Kidney Epithelium.

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Previously we have shown¹ that fresh macerated liver injected in a prescribed way stimulated hepatic regeneration. We have now obtained results which show that by the injection of macerated kidney the mitotic rate of the tubular epithelium may be increased. The stimulant effect appears in the averages. The causes of the individual variations were usually undetermined. The compilation (Fig. 1) includes all treated animals that lived 14 days. Many

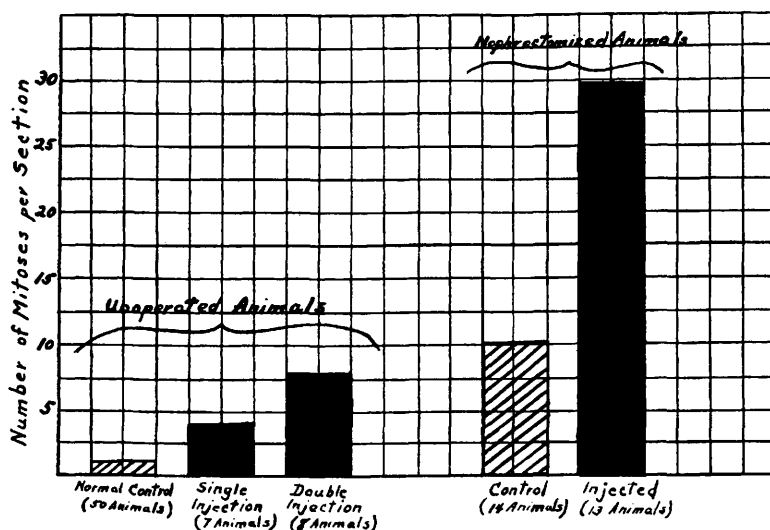


Fig. 1. Stimulation of Kidney Regeneration.

negative results obtained by methods other than those described and not included in this report, are as yet unexplained.

With a few exceptions the experimental rats weighed from 100 to 150 gm. Kidneys from somewhat larger rats were crushed in a mortar for intraperitoneal injection. Seven normal rats were injected with 2.5 gm. crushed kidney and killed on the fourteenth day. Eight other normal animals were injected on the first and fifth day with a total of 4.5 gm. and killed on the fourteenth day. In a second series a unilateral nephrectomy was performed; 14 of these were

¹ McJunkin, F. A., and Breuhaus, H. C., *Arch. Path.*, 1931, **12**, 900.

killed after 2 weeks. Thirteen nephrectomized animals were injected either once on the day after the operation or on the second and fifth day with autopsy on the fourteenth day.

Transverse sections were taken through the middle of the kidney and the number of the mitoses per section determined. The influence of the intraperitoneal injection is shown in the figure. Seven normal rats with one injection had an average of 4 mitoses per section and 8 with 2 injections had an average of 7.6 as compared with 0.75 in 50 normal untreated animals. In a second series the mitotic rate was tripled by the injections with an average of 10 in the nephrectomized and 30 in the injected nephrectomized. At this time we have determined only that the parenteral introduction of the whole cell under the conditions of the experiments increases the mitotic rate of the tubular epithelium.

6134

Absorption of Drugs from the Esophagus.

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While studying the effect of acute esophageal obstruction in the dog,¹ it was noted that the production of a closed loop of the esophagus was invariably fatal. Although post mortem evidence indicated that death was due to an aspiration pneumonia or to rupture of the loop with subsequent pleuritis and mediastinitis, the possibility of toxin absorption from the esophageal loop was considered. The following experiments were performed to ascertain the absorptive ability of the esophagus under various conditions.

Dogs were used. Under sodium pentobarbital anesthesia, a closed loop of the esophagus was prepared by ligating the esophagus in the neck and in the thorax just above the diaphragm. The substances to be tested were introduced into the lumen of the esophageal loop and the absorption estimated either by chemical tests of the urine and saliva, or by observation of the characteristic physiological effects.

Five experiments were performed in each group. Potassium iodide (in 10% solution), sodium ferrocyanide (in 10% solution), and sodium nitrite (in 5% solution) were all slowly but definitely

¹ Dragstedt, C. A., and Mullenix, R. B., *Arch. Surg.*, 1932, **24**, 152.