

with glucose and water into a jejunostomy. Several investigators have been able to keep dogs alive with high obstruction as long as 4 weeks by the daily injection subcutaneously of salt solution. The total loss of gastric juice and of pancreatic juice is rapidly fatal. When sodium chloride or Ringer's solution is administered to these dogs life is prolonged.

When digestive secretions are lost by vomiting in obstruction or by fistula experiments animals will rapidly die. When the secretions are replaced by salt solution the animals will survive for a considerable length of time. It appears very unlikely that salt solution introduced into the bowel would prevent any toxaemia that might occur from the obstruction.

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Studies in Capillary Fragility.

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(Introduced by A. C. Ivy.)

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One of us (Irving S. Cutter) has been interested for many years in the production of blood extravasations such as petechiae by trauma. We are all aware that the amount of force or injury necessary to produce such hemorrhagic extravasations varies greatly in different individuals. Investigation of such a problem naturally led us to a study of the blood vessels of the skin and specifically of the capillaries.

Using a Muller Weiss skin microscope (Zeiss) we first familiarized ourselves with the technic of capillary observations. The end of the nail bed is by far the most satisfactory location for observation. This, because there is a single row of capillary loops extending towards the finger tip, with no confusing venous network underlying. In this area one is able to follow the arterial and venous sides of the capillary loops for quite a distance and usually to see the blood flow.

It was our intention to produce ruptures of the capillary walls by means of measured negative pressure—thus measuring the capillary fragility.

This report and accompanying graph are based on 200 measured cases.

Method of Experimentation. The fourth finger of the left hand was used in all cases with the patient sitting and the hand on a level with the heart. The nail bed was lightly cleansed with a 3 to 5% salicylic acid solution, and the finger then inserted into a glass finger holder which is attached to the negative pressure apparatus. The column of mercury is then slowly raised. The finger is removed every few millimeters of mercury to look for signs of capillary rupture.

About half the cases show the rupture point by petechiae. In the other half one must examine the capillaries, and assume that a gap in the capillary line (not previously noted) means that rupture has occurred. We were unable to produce capillary damage in 14 cases.

The accompanying graph is the record of 200 consecutive cases, grouped according to ages.



Our results show definitely that fragility increases in direct proportion to age increase. The exceptions, such as the 49-year-old group, are produced by cases having marked generalized pathology. (The average blood pressure in this group is 280—systolic.) Another interesting observation is that ruptures were produced by the lowest pressures in cases which had systolic pressures above 200 millimeters mercury. The data are now too meager to make a comparative statement where the systolic pressure is above 150 mm. of mercury. We are also led to believe, from our observations, that all chronic diseases such as rheumatic heart disease, diabetes, etc., predispose to increased capillary fragility.

There is as yet no accurate method of measuring sclerosis. The

internist palpates the brachial artery or the ophthalmologist looks at the fundus of the eye and an inaccurate, understandardized opinion is given in most cases. Localized sclerosis is known to occur at the base of the brain, in the circle of Willis and in certain organs. The method would be of no value in such cases, but sclerosis is more often a generalized than a localized picture. We hope that this method may prove to be of some use in determining the likelihood of sclerosed vessels, and the degree to which vessels are sclerosed.

The interposition of thick horny skin makes observations very difficult. Negroes are of no value because of a pigment refraction.

While many of the above observations have been repeated on the same individual we are not entirely satisfied with the method and shall try to improve it. The final report on the clinical efficiency of this method should include hundreds and perhaps thousands of measurements. In our next report we shall classify measurements according to age—blood pressure and disease groups.

If we had omitted our known pathologic cases in making the graph, a more uniform curve would have resulted showing the correlation between age and fragility of the capillaries.

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Effect of Some Imidazoles on Gastric Secretion.

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Histamine and pilocarpine are imidazoles which are known to stimulate gastric secretion.

Since gastrin preparations give a strong Pauly reaction and produce a number of the pharmacological effects of histamine, the question of the identity of histamine and gastrin has been raised¹ although some differences in the chemical properties of gastrin preparations and histamine are known to exist.² Koch, Luckhardt and Keeton² concluded from their work that gastrin appears to be a basic imidazole derivative. They studied the effect of 3 imidazole derivatives, namely, histidine, methylimidazole HCl and hydroxymethylimidazole HCl, on gastric secretion with negative results.

¹ Ivy, *Physiol. Reviews*, 1930, **10**, 282.

² Koch, Luckhardt and Keeton, *Am. J. Physiol.*, 1920, **52**, 508.