

Remarkable changes in tonometer values were found in patients with diseases affecting chiefly the corium and subcutaneous tissues. This is well illustrated in scleroderma, the trophic changes of Raynaud's disease and edema. The well known increase in connective tissue and in its compactness in the former 2 diseases and the increase in interstitial fluid in the latter are sufficient to explain the increased firmness and turgidity of the finger tip found in these conditions. Since the method can be used to detect these changes, it may be used to follow objectively the progress of these conditions with or without treatment. This is particularly true early in the disease or later when changes are slight and ordinary methods of physical examination inadequate.

No significant changes could be attributed primarily to the epidermis except perhaps in 2 patients with arteriosclerosis and caloused hands. Their values of 9 and 10.5 contrast definitely with the values of 19, 20, 20+, and 20+ in remaining patients with arteriosclerosis who showed no epidermal thickening.

Conclusions. The application of a simple and accurate tonometer to the study of the tissues of the finger tip disclosed findings which may be used to follow the course of certain physiologic and pathologic states.

10116

Absorption of Cholecystokinin and Secretin from the Colon and Rectum.

H. DOUBILET* AND A. C. IVY.

From the Department of Physiology and Pharmacology, Northwestern University Medical School, Chicago, and the Laboratories of the Mount Sinai Hospital, New York.

This work was undertaken to ascertain whether cholecystokinin and secretin may be absorbed from the colon and rectum in significant functional quantities. If so, these hormones might be so administered and serve as functional tests.

A preparation of cholecystokinin (CCK) and secretin was used which contained one dog unit of cholecystokinin in 0.3 mg and of secretin in 0.1 mg. This was administered per rectum to dogs and human subjects.

* Ralph Colp Fellow in Physiology, the Mount Sinai Hospital.

The dogs, 5, were prepared for a record of intra-gallbladder pressure and the principal pancreatic duct was cannulated, the accessory duct being tied. Before the dogs were anesthetized, the colon was lavaged to remove all fecal material. The colon of the human subjects, 5, was likewise lavaged.

One hundred mg of the hormone—(1000 units of secretin and 333 units of CCK)—containing preparations were dissolved in normal saline buffered at pH 6.0. The gallbladder did not respond. The flow of pancreatic juice was definitely augmented in 4 of the 5 dogs. In dog 1, the basal flow was doubled; in dog 2, no effect was obtained; in dog 3, a 3-fold increase in flow occurred; in dog 4, the flow increased from a basal of 1 drop in 10 minutes to 1.5 drops per minute; in dog 5, the flow increased from a basal of 1 drop in 30 minutes to 1 drop in 3 minutes. A solution (30 cc) of 25% alcohol, containing 100 mg of the hormone, caused a 6-fold increase in rate of flow; but on performing suitable controls, it was found that the alcohol stimulated the flow of pancreatic juice, and it could not be shown definitely that the alcohol favored the absorption of secretin.

The effect of the hormone preparation on the 5 human subjects was studied by the method of cholecystography; the effect on the pancreas was not studied. The gallbladder was visualized and the colon evacuated by enema before the first X-ray film was made. The gallbladders concentrated well. Then 1.5 g of the hormone preparation (15,000 dog units of secretin and 4,500 units of CCK) dissolved in 200 cc of a saline buffer (pH 6.0) were instilled into the rectum. Films were then made at intervals for 6 hours. In 2 of the 5 subjects the gallbladder decreased in size slightly, but not significantly. In one of the subjects whose gallbladder did not decrease in size after the rectal instillation of the preparation, the test was repeated with negative results.

Summary. Secretin may be absorbed to a slight extent from the dog's colon when administered in relatively enormous doses. Cholecystokinin was not absorbed. Cholecystokinin (4,500 dog units) when placed in the rectum of man is not absorbed to any significant extent.