able to assume that they are the result of a direct action of the cortical steroids upon their manufacture. Such an explanation would be consistent with the known "anti-anabolic" properties(12) of these hormones. Therefore, until more data is accumulated on this point, it will be wise to use the sedimentation rate in parallel with the eosinophil count, merely as an index of continued hormonal activity, not as a criterion of effectiveness of therapy on disease activity.

Conclusions. 1. Both ACTH and Cortisone therapy depress the gamma globulin and fibrinogen levels in the blood of patients with active rheumatoid arthritis and scleroderma.

2. Changes in these 2 blood proteins are responsible for the observed changes in the sedimentation rate.

3. At the present state of our knowledge, the sedimentation rate cannot be used as an index of the effectiveness of hormone therapy on the active disease process.

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12. Albright, F., *Harvey Lect.*, 1942-43, v38, 123.

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Fat Necrosis Produced by Exposure of Pancreatic Duct and Duodenal Mucosa.* (18461)

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In previous papers(1,2) the effects of experimental injuries to the pancreas were reported. It had been found that open transsection of the main pancreatic duct or the lengthwise incision of the main duct and its two main branches was not followed by fat necrosis unless the animal had been fed before or after the operation, or when cholinergic drugs had been given postoperatively. Extensive crushing or complete transverse tearing of the pancreas did not result in any intra-abdominal fat necrosis, regardless of whether the animals were fed or starved pre- or postoperatively. In a discussion of these results an experimental procedure was suggested of which no report was found in the pertinent literature. Nevertheless, this paper is not a claim for an original procedure and is merely a report on the use of an effective method for the experimental production of fat necrosis.

Twenty male and female mongrel dogs, weighing from 7 to 12 kg, were subjected to an aseptic operation under pentobarbital-sodium anesthesia. The main pancreatic duct was exposed and carefully excised together with a circular flap of duodenal wall approximately 2 cm in diameter, with the orifice of the duct in its center; the opening in the duodenum was closed. It was possible to perform this procedure with a minimum of contamination. The dogs were fasted pre- and postoperatively, but water was given freely after the operation. Most animals received penicillin and streptomycin postoperatively.

Of these 20 dogs, 3 showed no ill-effects. They were sacrificed on the 3rd, 4th, and 18th day respectively, and there was no evidence of intraperitoneal disease. A fourth dog, which was in good shape and would probably have survived, was sacrificed on the 8th postoperative day, and autopsy revealed a moderate amount of disseminated fat necrosis. In 2 of these 4 dogs, the duodenal flap

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1. Popper, H. L., *Surg. Gynec. Obst.*, 1949, v88, 254.

2. Popper, H. L., *Am. J. Dig. Dis.*, 1949, v16, 343.

was covered by firmly adherent omentum, in the other 2 by firmly adherent duodenum.

Of the remaining 16 dogs, 1 died on the 2nd, 8 on the 3rd, 4 on the 4th, and one on the 8th postoperative day. Two dogs appeared to be moribund, and they were sacrificed on the 3rd and 4th postoperative day. All of these dogs showed severe pathologic changes, with varying amounts of hemorrhagic fluid in the peritoneal cavity and most extensive intra-abdominal fat necrosis, involving mostly the omentum, the mesentery, and the parietal and peri-renal subperitoneal tissue. Pancreas and liver were grossly normal. The duodenal flap was usually somewhat cyanotic, but otherwise intact and easily demonstrable. In the majority of dogs fat necrosis was found in the chest also, mostly on the superior surface of the diaphragm, on the pericardium, in the paravertebral region and on the inner surface of the chest wall, usually along the intercostal spaces. No fat necrosis was found in any other region. Bacteriological tests showed no growth of bacteria from the peritoneal fluid in some dogs, while in others various aerobic and anaerobic bacteria were found.

Sixteen of 20 operated animals showed extensive fat necrosis which, if the 2 moribund animals were included, was fatal on the 3rd or 4th postoperative day in most dogs. Three had no intraperitoneal disease and one showed fat necrosis of moderate degree.

The operation described above appears to be the most simple and efficient one of all methods we have employed for producing fat necrosis in the dog, since it shows a high percentage (85%) of positive result with a rather uniform course. Other procedures are less reliable and results are not as uniform. The technic used by Dragstedt *et al.*(3) for testing the toxicity of pancreatic secretion is similar in principle to the method described above. However, a 2-stage operation, an open flap of jejunum, and a rubber tube from the cannulated pancreatic duct onto the jejunal flap, represent 2 separate operations and introduce complicating factors.

Summary. Excision of the pancreatic duct together with a duodenal flap surrounding its papilla is followed in the majority of dogs by extensive intraperitoneal and marked intrathoracic fat necrosis, and usually leads to the death of the dog on the 3rd or 4th postoperative day. This appears to be the most reliable procedure for producing fat necrosis in the dog.

3. Dragstedt, L. R., Haymond, H. E., and Ellis, J. C., *Arch. Surg.*, 1934, v28, 232.

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Distribution and Excretion of Radioactive Hafnium[181] Sodium Mandelate in the Rat. (18462)

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The advent of radioisotope therapy for malignant disease and other pathological conditions has stimulated the investigation of many elements and compounds in the search for substances with tissue or organ specificity, and for an understanding of principles governing biological localization. Element 72, hafnium, has been studied by us in an attempt to determine its distribution in the body after the intravenous administration of its man-

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