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X-Ray Diagnosis of Ileus. Comparison of Results Obtained by Roentgenograms in Horizontal and Upright Positions.

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The value of plain roentgenograms of the abdomen without the administration of contrast substances in the diagnosis of ileus has been repeatedly emphasized by clinicians. Goehl, Lynch, Borman, and Wangensteen¹ found experimentally that roentgenologic evidence was of less value in the presence of strangulation than in simple obstruction. The roentgen diagnosis of ileus is based upon the fact that in obstruction there is an accumulation of gas and fluid proximal to the point of obstruction which can be visualized roentgenologically. Whereas the presence of gas visualized in the roentgen plate is of diagnostic value, it is considered by many observers² that the finding of multiple fluid levels (demonstrated by obtaining the roentgenogram in such a way that the junction between gas above and fluid below may be visualized) is of greater diagnostic importance.

The present investigation was undertaken to compare the results obtained with roentgenograms taken in the horizontal position and those taken in the upright position, the latter technic demonstrating fluid level formation.

Ninety-four observations were made on 19 dogs. At each observation, 2 roentgenograms of the abdomen were obtained, one with the animal in the horizontal position, and the other in the upright position. The x-rays were made by means of a specially constructed radiographic animal board.³

A simple obstruction of the jejunum and terminal ileum was produced in 3 and 7 animals, respectively. A "strangulated" obstruction of the jejunum, ileum and sigmoid flexure of the colon was produced in 2, 5, and 2 animals, respectively. Roentgenograms were taken at intervals after the obstruction, varying from 1 to 75 hours.

In the high jejunal obstructions, little difference could be detected

¹ Goehl, R. O., Lynch, F. W., Borman, C., and Wangensteen, O. H., *Proc. Soc. Exp. Biol. and Med.*, 1930, **27**, 952.

² Ochsner, Alton, and Granger, Amedee, *Ann. Surg.*, 1930, **92**, 947.

³ Ochsner, Alton, and Gage, I. M., *Radiology*, in press.

in the films taken in the horizontal position between the simple and strangulated obstructions, but in the roentgenograms obtained with the animal in the upright position, there was considerable difference, in that 50% more fluid levels were present in films of animals with strangulated obstruction than in those with simple obstruction. The earliest appearance of gas accumulation or fluid levels, both in the simple or strangulated obstruction, was 3 hours after the obstruction.

In obstructions of the ileum, there was considerable difference between roentgenograms obtained from animals with strangulated and simple obstructions. The films of the animals with an associated strangulation showed evidence of gas accumulation and fluid level formation within one to 2 hours after the obstruction, whereas in the films of animals with simple obstruction, the earliest evidence of gas accumulation was 5 hours, which, however, did not become very marked until 7 to 9 hours after the obstruction. Similar results were obtained in strangulated obstruction of the sigmoid.

In comparing the roentgenograms taken in the horizontal position and those taken with the animal in the upright position, there was relatively little difference except that possibly gas alone without the evidence of fluid could be demonstrated earlier than gas and fluid. However, the findings of gas and fluid as evidenced by multiple fluid levels are so definite and pathognomonic, it is believed that when it can be demonstrated it is of much more diagnostic importance than gas alone.

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Experimental Obstructive Jaundice. Effect on Fibrinogen and Coagulation of the Blood.

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There has been very little work done to convince one that a deficiency of fibrinogen in the blood does or does not result from obstructive jaundice and cause an increase in the coagulation time. As fibrinogen plays such a prominent rôle in blood coagulation, it seems feasible that an experimental investigation should be made to determine the effect of obstructive jaundice on the amount of fibrinogen in the plasma and the subsequent effect on the time of coagulation of the blood.