Benign tumors of the intestinal tract are rare, and vascular tumors are even rarer. In 1898, Longuet (1) cited 3 cases. In a review of the literature in 1924 Brown (2) found 20 cases of vascular tumors below the stomach. McClure and Ellis (3) in 1930 reported 25 cases. The tumors are more often single than multiple. Of Brown's 20 cases, 12 were single and 8 were multiple. Of the 25 cases of McClure and Ellis, 14 were single and 11 were multiple. Involvement of the entire gastro-intestinal tract is rare. Winternitz and Boggs (4) reported such a case of multiple hemangiomata, some of which were undergoing malignant degeneration.

These hemangiomata have been classified into four groups by Brown: (a) multiple tumors of the vascular arcades arising either in a vein or artery, and microscopically either capillary or cavernous hemangiomata; (b) those arising in the submucosa, growing towards the lumen with possible ulceration and hemorrhage; (c) those arising in the submucosa which grow to a large size and which may cause obstruction; (d) diffuse ring-like tumors beginning in the submucosa, involving the muscularis, and constricting the lumen of the gut, producing acute or chronic intestinal obstruction. They may occur at any age, being reported as early as two months and as late as seventy-nine years, and may be located anywhere from the mouth to the anus.

These tumors are brought to the attention of the patient by symptoms of obstruction, either acute or chronic, or by signs of hemorrhage. About half of them give no symptoms. In this latter group diagnosis is not usually made, though certain conditions may lead to their discovery. There may, for example, be other hemangiomata of the skin, tongue, or mucous membrane which are visible. In other instances obscure hemorrhage may occur for which no other etiological agent can be suggested. Finally the lesions may be detected radiographically.

Judd and Rankin (5) have described the radiological changes in conjunction with hemangiomata of stomach and duodenum. They are not, however, distinguishable from those of cancer and as the patients are often elderly, the diagnosis of cancer, is, of course, regarded as the more probable one. With radiological changes in portions of the gastro-intestinal tract such as the duodenum, a benign tumor rather than a malignant tumor may be suspected.

Hemangiomata may bleed within the gastro-intestinal tract and in some instances may cause death from massive hemorrhage. Laboulbène (6) reported a case with death from hemorrhage from hemangiomata in the duodenum. Paci (7) described a case in which a cavernous hemangiomata was torn loose in the bowel during violent purging and was passed with a large amount of blood.
Intestinal obstruction or intussusception requires immediate operation. In these cases, the diagnosis is usually not made before operation. Resection of the bowel has been successful in a number of cases. Sometimes, however, the lesions are multiple and operation is impossible.

At the Pondville Hospital, from June 20, 1927, to April 6, 1937, there were 1200 autopsies. Three cases of hemangiomata of the gastro-intestinal tract were found, an incidence of 0.25 per cent, which indicates the rarity of this condition.

**Case Reports**

**Case I (No. 11994):** N. W. M., an eighty-one-year-old man, was admitted on Jan. 26, 1937. He had previously been seen at the Huntington Memorial Hospital, where in 1924 he received treatment for an epidermoid carcinoma of the nose with complete destruction of the lesion. In August 1933, an epidermoid carcinoma, grade 2, had been excised from the left cheek. In 1934 a papillary projection was noted on the left upper lid. This was removed and proved to be a basal-cell carcinoma with foci of keratinization. X-ray treatment was given to the lesion.
In August 1936 a gastro-intestinal series showed no abnormal findings, and a subsequent review of the films revealed no abnormalities, a remarkable feature of the case in view of the extensive lesions found at autopsy. Stool examinations for occult blood were also negative.

The patient's father had died of osteogenic sarcoma, his mother of cancer of the breast. One brother died at seventy years of carcinoma of the stomach and a sister died at sixty-nine of cancer of the pharynx. One sister and one brother had died of non-cancerous conditions.

On admission the patient was somewhat emaciated. Because of obvious senility and inattention, it was impossible to obtain a reliable history, but on questioning a niece who had cared for him for eight years, it was found that he had never had gastro-intestinal symptoms of any sort.

The left eyelid was swollen and everted, and there was an increase in the size of the globe, with apparent loss of sight. X-rays showed destruction of the lower border of the left orbit. There were several diffuse well-demarcated dark blue lesions on the dorsal surfaces of both hands which resembled hemangiomata, and a similar small lesion on the lower lip.

The patient grew progressively weaker and died Feb. 5, 1937. The exact cause of death seemed uncertain. There was no evidence of pneumonia while the patient was alive, and cardiac symptoms were absent.

Autopsy: Just above the upper eyelid on the left was a crusted superficial grayish-yellow lesion measuring about 1 × 2 cm. On palpation some erosion of the bone of the upper orbit was felt. The eye was surrounded by firm grayish-yellow tissue, completely covering the corneal surface and extending posteriorly into the orbit.

At the outer border of the lower lip on the left was a small, flat lesion measuring 1 cm. in diameter, and bluish in color. Over the dorsal surface of the left hand were slightly raised bluish-red areas averaging 1 cm. in diameter, suggesting collapsed vessels.

Elevated dusky violet nodules studded the surface of the small and large bowel. These nodules were definitely subserosal. There was no adjacent fibrosis, no thickening

![Fig. 3. Microscopic Section (× 10) of Cavernous Hemangioma of Small Bowel, Showing Penetration into Muscular Wall](image-url)
of the serosa, and no constant relationship to mesenteric attachment. About 400 c.c. of clotted blood was found in the retroperitoneal region in the left upper quadrant.

The esophagus was negative. The stomach contained about 300 c.c. of cloudy yellow material. No hemangiomata were noted. The duodenum was bile-stained. Studding its mucosal surface were numerous slightly-raised bluish-purple, sharply demarcated nodules. These were quite firm, partially compressible, and on section were of a dusky violet color. They bore no constant relationship to the axes of the bowel. Two of the nodules, each measuring 1 cm. in diameter, located posteriorly in the first horizontal portion of the duodenum in about its midportion, had ruptured, causing extravasation of blood into the retroperitoneal space. On the mucosal surface of the duodenum the nodules had not ulcerated nor had they bled into the lumen of the bowel. They were of various shades of bluish-red and were fairly soft. Some were discrete while others were conglomerate. The average height was 0.5 cm.

These nodules were present throughout the entire intestinal tract, though they became less frequent in the terminal ileum, where they were single, occurring at intervals of about 4 or 5 cm. and measuring from a few millimeters up to 0.5 cm. in diameter. In the large bowel they occurred on the average of about one in every 10 cm. and were similar to those in the small bowel. In the small bowel, where they were most numerous, they had not become large enough to cause any degree of obstruction. None of the other organs showed hemangiomata grossly.

On microscopic examination, the jejunum, duodenum, ileum, large bowel, and gallbladder showed in their submucosa many distended endothelial-lined spaces filled with blood. These at times penetrated the muscle and extended to the serosal surface. Microscopically, it was easy to see how one of them might perforate through the serosa. There was no evidence of ulceration of the mucosal surface, nor were there any evidences of thickening of the serosa or increased fibrosis.

This case is unusual not only for the occurrence of multiple hemangiomata involving the entire small and large bowel but because of the patient's death from hemorrhage due to perforation retroperitoneally, which is even more rare. The family history of cancer is of interest, as well as the fact that the patient himself had three distinct cancers of the skin. Visible hemangiomata were also present on both hands and the lip.
CAVERNOUS HEMANGIOMATA OF SMALL AND LARGE BOWEL

CASE II (Autopsy 34-88): E. D., a seventy-year-old man, had an epidermoid carcinoma of the antrum, grade 1, for which he received x-ray therapy. The lesion failed to regress, broke down, and ulcerated, causing the patient’s death. There were no visible hemangiomas of the skin or mucous membrane.

At autopsy there was found in the jejunum a deep reddish-blue lesion measuring about $0.5 \times 0.025$ cm., slightly raised and flattening the overlying mucosa. There was no ulceration of the mucosal surface. There was no thickening of the serosa over it.

Microscopic examination of the jejunum showed between the muscularis and the mucosa a vascular space about 3 mm. in diameter, with an endothelial lining. The mucosa contained no glands in this area, and the muscularis was moderately thinned.

CASE III (Autopsy 37-28): J. B. M., a man of sixty-four years, had an epidermoid carcinoma of the larynx, grade 2, with extension to the esophagus and metastases to the cervical nodes and thyroid. Some regression followed x-ray irradiation but later an abscess developed in the left side of the neck and death occurred from sepsis. The patient had no gastro-intestinal symptoms at any time. No hemangioma of the skin or mucous membrane were recorded.

At autopsy, there were found in the ileum and jejunum six evenly-distributed, raised reddish lesions with a bluish tint, measuring from a few millimeters up to 1 cm. in diameter. There was no ulceration of the mucosa. The lesions bore no relation to the long or transverse axes of the bowel. They were not visible on the serosal surface.

Microscopically the submucosa showed numerous endothelial-lined spaces filled with blood. They had penetrated for a short distance into the muscularis.

CONCLUSIONS

1. Hemangioma of the gastro-intestinal tract are rare.
2. The presence of visible hemangioma, obscure hemorrhage, and signs of acute or chronic obstruction, together with x-ray findings, may lead to a correct diagnosis.

BIBLIOGRAPHY

1. Longuet: Progrès, méd. 8: 137, 1898.