CASE REPORT

Case Report of the Descending Colon Located Completely in the Right Extraperitoneal Cavity and Sigmoid Colon Located in the Right Quadrant in a Patient with a Splenic Flexure Tumor: a Rare Anomaly

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Abstract Cases in which congenital anomalies of the colon and colon tumors are observed together are very rare. The aim of this article is to present a splenic flexure tumor case, which possessed the anomaly of the descending colon in the right extraperitoneal space and the sigmoid colon located in the right quadrant. Similar findings have previously been reported in two cases in cadaveric studies.

Keywords Colon cancer · Descending colon · Sigmoid colon · Anomaly · Anatomy

Introduction

Congenital fixation and rotation anomalies of the colon are more rare in adult patients than in pediatric patients; the association of them with colon cancer is much more rare [1, 2]. The anomaly of the descending colon being located in the right extraperitoneal and the sigmoid

colon being located on the right has been reported previously in the literature in two cadaver studies [1, 3]. The association of our findings with a splenic flexure tumor is very rare; and, to the best of our knowledge, our report is the first clinical case in the literature. The aim of this article is to present clinical and radiological details of this rare anomaly.

Case Report

A 56-year-old male patient was admitted to our unit with the signs of mechanical bowel obstruction. The patient had no family history of malignancy. The patient underwent laboratory and radiologic investigation before he was taken to emergent exploration. We were informed by the radiologist before the operation about an obstructing tumor located at splenic flexura. The patient underwent an emergency operation. Upon surgical exploration, we found tumoral mass almost completely blocking the lumen, on the splenic corner. The splenic flexure was freed opening the gastrocolic ligament. Further, the descending colon was observed not to be in the normal anatomical location. Sigmoid colon was located in the right abdominal quadrant and the mesocolon was in loop form. There was no descending colon continuity after the proximal sigmoid colon (Fig. 1). Following the colon proximally, the descending colon was observed to progress completely extraperitoneally from the inferior ligament of Treitz to the right aorta, and then through the inside of small

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Fig. 1 The entrance of the descending colon into retroperitoneal region through proximal sigmoid colon (*black arrow*)

intestine mesentery to the ileocecal valve. The colon segment was freed with its mesentery and brought to its normal anatomic position protecting the right ureter and vascular structures entering the retroperitoneal space. Then a left hemicolectomy was performed. Apart from this anomaly, other intraabdominal organs including ascending colon were in their normal anatomic location and shapes. Our surgical team was not warned by the radiologist about this anatomic anomaly before the operation. So that this anomaly was discovered intraoperatively. The patient, in whom no complications developed in the postoperative period, was discharged on postoperative day 7. Pathology revealed well-differentiated adenocarcinoma with no lymph node metastasis. The patient received adjuvant chemotherapy. At one year follow-up, the patient was doing well, with no recurrences.

Discussion

The sigmoid colon is the part of the large intestine with the most variation in terms of length and position. On

the other hand, position anomalies of descending colon are much rarer.

The embryonic intestine consists of three parts: foregut, midgut, and hindgut. The hindgut comprises the distal 1/3 transverse colon, descending colon, sigmoid colon, rectum, and proximal dentate line. This development is divided into three phases. Fixation of the colon to posterior peritoneum occurs in the third phase. Fixation anomalies develop in this phase [4, 5].

The descending colon is surrounded by peritoneum both anteriorly and laterally. It is about 30 cm in length and progresses from the trough between the psoas and quadratus lumborum muscles to slightly midline and inferior vertically. The descending colon is mainly fixed to the retroperitoneum and has no real mesentery [4].

Shrivastava et al. first described this anomaly and divided into four main parts in their cadaveric study. The first part stretched obliquely from the splenic flexure to the right side along the root of the mesentery, traversing the umbilical quadrant, 3.5 cm to the right of midline at the level of L5. The second part turned upward and toward the right, ascending up to the level of L2. The third part descended obliquely on the right side of the ascending limb up to the pelvic brim. The fourth part was in the lesser pelvis extending from the right sacroiliac joint to the third sacral body [1]. In our case, on the transverse CT images, the descending colon was lining the retroperitoneum obliquely. It was initially heading toward to the left side in front of the lower pole of the left kidney and the left ureter. The descending colon then was passed the aorta above the level of inferior mesenteric artery origin. It crossed the midline at the level of lumbar intervertebral disk 2-3. At the level of the L5 vertebral body, the descending colon was lining 2 cm right of the midline. The inferior mesenteric vein was also crossing the midline to the right side with the descending colon. The sigmoid colon was entirely located in the right lower quadrant. The descending colon was turned anteriorly at the level of L4-5 vertebra where it entered into the peritoneal cavity forming the sigmoid colon. This level was 4 cm inferior to the aortic bifurcation and where the right psoas muscle and the right ureter were located posteriorly (Fig. 2).

The dissection of colon segment with anomaly by laparotomy was possible with the mobilization of descending colon from proximal after providing anatomical adaptation.

In conclusion, we report a rare anomaly that can be detected by careful examination with preoperative cross-sectional imaging methods. It is a major congenital colon anomaly that should be considered preoperatively in order to prevent complications, particularly in patients in whom an emergency operation is required.

Fig. 2 Tumoral thickening is observed on the splenic flexure wall (*white arrows*) on axial CT scans with intravenous contrast (**a**). The descending colon is lining in the retroperitoneum obliquely from left to right (*arrowheads*). *t* transverse colon (**b**) *s* sigmoid colon (**e, f**) located in the right lower quadrant. Obstructive dilatation is observed in small and large bowel loops until the tumor level in all sections

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no competing interests.

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