COLORECTAL CANCER AND SITUS INVERSUS TOTALIS: CASE REPORT

Câncer colorretal e situs inversus totalis: relato de caso

Marcelo Pandolfi BASSO, Adriana Borgonovi CHRISTIANO, Francisco de Assis GONÇALVES-FILHO, Marcelo Maia Caixeta de MELO, Luiz Sérgio RONCHI, João Gomes NETINHO

From the Disciplina de Coloproctologia, Departamento de Cirurgia, Faculdade de Medicina de São José do Rio Preto (Coloproctology Service, Department of Surgery, São José do Rio Preto School of Medicine), São José do Rio Preto, SP, Brazil

Correspondence:
Marcelo Pandolfi Basso
E-mail: celinpb@hotmail.com

INTRODUCTION

Situs inversus totalis is a rare congenital condition that occurs in one out of 4000–20000 people, characterized by complete transposition of the thoracic and abdominal viscera1–14. In contrast, situs solitus is a term that refers to the normal arrangement of body organs. Any disposition of organs between these two extremes is designated by situs ambiguous, situs transversus or situs inversus partialis8.

The etiologic nature of this anomaly is not known. This condition is typically associated with normal life expectancy unless a gastrointestinal or cardiac anomaly is present2,8. The typical cardiac anomaly has from 3–5% incidence, is transposition of the great vessels, and 80% of these patients have a right sided aortic arch5. Other vascular anomalies are variation of celiac trunk and superior mesenteric artery4. There are also anomalies of the gastrointestinal system to include biliary tree atresia, duodenal atresia, preduodenal portal vein, colonic aganglionosis, malrotation of the intestine, polysplenia/asplenia, anular pancreas, diaphragmatic hernia and others4,5. Moreover, it may be associated with clinical syndromes, like Kartagener’s (situs inversus, chronic rhinosinusitis and bronchiectasias)14.

This anomaly is not a premalignant condition. However, many cases of malignant neoplasms and situs inversus totalis have been reported, especially gastric cancer8. Association between colorectal cancer and situs inversus totalis is rare.

CASE REPORT

Man with 74 years-old, white, ex-alcoholic and smoker had family history essentially negative for either situs inversus totalis, familial and hereditary disease or colorectal cancer. The patient didn’t know he had situs inversus totalis. He had a history of abdominal pain in left hemiabdome, asthenia and mucocutaneous pallor for the last two years. He had normal physical examination, except for pale mucous membranes, heart sounds audible in the right chest and slightly painful on palpation of the left abdomen. Abdominal ultrasound showed only abdominal situs inversus and colonscopy demonstrated sub-oclusive lesion in hepatic angle of the colon, which biopsy revealed moderately differentiated adenocarcinoma. His carcinoembryonic antigen was 1.8 ng/dL. ECG and chest radiography indicated dextrocardia. Computerized tomography showed complete transposition of abdominal viscera, confirming situs inversus totalis (Figure 1).

Financial source: none
Conflicts of interest: none
Received for publication: 08/10/2013
Accepted for publication: 21/08/2014

FIGURE 1 - Chest x-ray film shows dextrocardia and findings of inversion of the abdominal organs in abdominal computed tomography

FIGURE 2 - Surgical abdominal findings: A) liver in the left upper part; B) appendix in lower left; C) duodenoejejunal angle to the right; D) gallbladder in the left upper part; E) spleen and great curvature of the stomach in the right upper position; F) resected specimen showing an ulcerated mass in hepatic flexure of the colon.
According to these findings, a proximal hemicolectomy was carried out with lymph nodal dissection followed by ileocolic anastomosis. The cavity inventory at laparotomy showed situs inversus abdominal and presence of spherical and hard lesion in the hepatic flexure of colon (Figure 2) with absence of macroscopic metastatic involvement.

Anatomopathological evaluation (Figure 2) confirmed tubular adenocarcinoma, moderately differentiate; presence of perineural invasion; vascular and angiolymphatic involvement were absent. TNM staging was T3N0M0, stage IIA.

Postoperative course was uneventful and he was discharged from the hospital on the 4th day after operation. He began adjuvant Mayo Clinic regimen, but stopped in the 4th cycle due toxicity of the gastrointestinal tract. Up to the moment of this writing, no sign of recurrence or metastasis has been observed.

**DISCUSSION**

In the literature, there are 13 cases recognized about this issue, making a total of 14 cases, by adding this report. Enrolling all papers, colorectal cancer was more frequent in women (n=9; 64%) than men (n=5; 36%). The age ranged from 41-78 years, mean of 63,71 and median of 61,5 (SD=±10,40). Adenocarcinoma was the histological type present in all cases. According to an exact test for proportion and level of significance was α=0.05. Regarding the surgical procedure, 10(71%) patients underwent proximal hemicolectomy, and one case each (7%) of rectosigmoidectomy, abdomino-perineal resection and ileocecal anastomosis. The cavity inventory at laparotomy showed situs inversus than other patients because of different anatomic position of organs, especially in laparoscopic surgery.

The preoperative evaluation for situs inversus includes two main objectives: evaluation for gastrointestinal and cardiac anomalies and orientation of the viscera. The extent of evaluation should be based on the complexity of the procedure. Anomalies should be defined by using various imaging technologies to determine appropriate surgical treatment and decrease surgical difficulties and time. Furthermore, the risk of occurrence of intra-operative complications is higher in comparison with the procedures of patients without situs inversus totalis. Besides, incorrect surgical incision and a second operation are avoided.

**REFERENCES**

1. Bielecki K, Gregorczyk M, Baczk L. Visceral situs inversus in three patients. Wiad Lek. 2006; 59(9-10): 707–9.
2. Blegen HM. Surgery in situs inversus. Ann Surg. 1949; 129:244-59.
3. Fujiwara Y, Fukunaga Y, Higashino M, Tanimura S, Takemura M, Tanaka Y and Osugi H. Laparoscopic hemicolectomy in a patient with situs inversus totalis. World J Gastroenterol. 2007; 13(37): 5035-37.
4. Goi T, Kawasaki M, Yamazaki T, Konomi K, Katayama K, Hirose K and Yamaguchi A. Ascending colon cancer with hepatic metastasis and cholecystolithiasis in a patient with situs inversus totalis without any expression of UVRAG mRNA: report of a case. Surg Today. 2003; 33:702-6.
5. Greene QJ, Cheddie WG. Ascending colon cancer in a patient with situs inversus. Am Surg. 2007; 73(8):831-2.
6. Grigorjew A, Andrzejczak L. Colonic cancer in situs inversus. Wiad Lek. 1982; 35:901-2.
7. Ikemoto M, Shima M, Hara M, Fujimori K and Tsujinaka T. A case of multiple colorectal cancer with situs inversus totalis. J Jpn Coll Surg. 2005; 30(1):52-6.
8. Iwamura T, Shibata N, Haraguchi Y, Hasashi Y, Nishikawa T, Yamada H, Hayashi T and Toyoda K. Synchronous double cancer of the stomach and rectum with situs inversus totalis and polypsplenia syndrome. J Clin Gastroenterol. 2001; 33(2):148-153.
9. Nagase T, Adachi I, Yoshino Y, Morita K, Murakami N and Yamada T. A case of ascending colon cancer with total situs inversus and intestinal malrotation. J Jpn Surg Assoc. 2003; 64(7):1773-6.
10. Reiff PS, Mathias LR, Souza IES, Reif ABM. Surgery in situs inversus. A case report (acute cholecitis and carcinoma of the colon). Rev Bras Cir. 1992; 82(4):149-50.
11. Shibuya J, Nakakuma T, Oshima Y, Kakita A. Operation case of situs inversus totalis associated with a transverse colon cancer. Nippon Gekakei Rengo Gakkaishi. 2003; 28(2):271-4.
12. Takaizawa Y, Maeda K, Shimizu J, Kawaura Y. A case of colorectal cancer associated with situs inversus totalis. Surgery. 2002; 64(2):245-8.
13. Wright CB, Morton CB. Situs inversus totalis with adenocarcinoma of the cecum: case report. Am Surg. 1971; 37(2): 65-6.
14. Yoshida J, Tsuneyoshi M, Nakamura K, Murakami T, Akamine Y. Primary ciliary dyskinesia with transverse colon carcinoma. Am J Clin Pathol. 1986; 85:101-104.

**CONFLICTS OF INTEREST**

Financial source: none
Conflicts of interest: none

**ACKNOWLEDGMENTS**

From 1Canakkale 18 Mart University, Medical School, Department of General Surgery and 2Canakkale 18 Mart University, Medical School, Department of Anestesiology, Canakkale, Turkey

Correspondence:
Omer Furuk Ozkan, MD
E-mail: ozkanfomer@gmail.com

Received for publication: 29/08/2013
Accepted for publication: 24/07/2014

**INTRODUCTION**

Endometriotic tissue localized outside the uterine cavity is defined as endometriosis. It commonly has been demonstrated in the ovaries, peritoneal surfaces, vagina, scar tissues, cervix, fallopian tubes, rectum, urinary tract, pouch of Douglas and possibly any organ in the abdomen. The estimated prevalence reported in literature ranges from 8-15%. Extra-pelvic localization of endometriomas is relatively rare. Especially abdominal wall placements are very infrequent. Usually such cases are associated with surgical scars. The proposed mechanisms that have been put include retrograde menstruation, venous or lymphatic dissemination or metastasis, and mechanical transplantation into scars at the time of surgery.