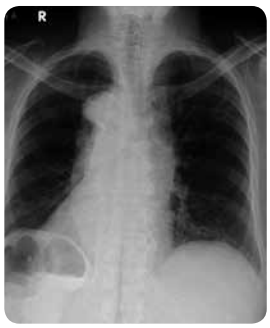

CONCOMITANT *SITUS INVERSUS TOTALIS* AND COLON CANCER: A CASE REPORT

Concomitancia de *situs inverus totalis* y cáncer de colon: Presentación de un caso

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Key words (MeSH)
Situs inversus
Colonic neoplasms
Congenital abnormalities

Palabras clave (DeCS)
Situs inversus
Neoplasias del colon
Anomalías congénitas

Summary

Situs inversus totalis (SIT) is a rare congenital anomaly in which the thoraco-abdominal inner organs are placed in a completely opposite position to the usual. Up to date, there have been reported cases of situs inversus totalis concomitant with different intraabdominal neoplasms, but there are only few cases related with colorectal adenocarcinoma. Besides this, colorectal carcinoma is a frequent gastrointestinal neoplasm with a high morbimortality rate due to its detection in advanced stages. We report a case of a 70-year-old woman in oncologic following up with sigmoid adenocarcinoma and situs inversus totalis. We highlight imaging findings and their value in staging and monitoring, as well as anatomic consideration after clinical and/or surgical treatment.

Resumen

El situs inversus totalis (SIT) es una rara anomalía congénita en la cual las estructuras de la cavidad toracoabdominal se encuentran en una posición completamente opuesta a la usual.

Hasta la fecha, se han informado casos de situs inversus concomitantes con diversas neoplasias intraabdominales, pero existen muy pocos relacionados con adenocarcinoma colorrectal. A pesar de esto, el adenocarcinoma colorrectal es una neoplasia frecuente del tracto gastrointestinal con una elevada tasa de morbimortalidad, dado que su detección en la mayoría de los casos se da en etapas tardías. Se presenta el caso de una mujer de 70 años de edad que asiste a control por seguimiento oncológico de neoplasia de sigmoides asociada a situs inversus totalis. Se resaltan los hallazgos imaginológicos y su valor en la estadificación y seguimiento, así como las consideraciones anatómicas posteriores al tratamiento clínico-quirúrgico.

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Introduction

Situs inversus totalis (SIT) is a rare congenital anomaly characterized by right-left inversion of the thoracoabdominal viscera. The incidence in the general population ranges from 1:4,000-20,000 people (1,2).

The cause of *situs inversus totalis* is still unknown, but the most accepted theory indicates that it is an autosomal recessive alteration in the short arm of chromosome 14 that causes a failure of the enzyme cascade during the gastrulation period, in which the craniocouadal, dorsoventral and right-left axes are established in the embryo (3,4).

Nor has it been described as premalignant predisposition; however, some cases associated with neoplasms of solid or hollow organs of the digestive system have been reported in the literature.

Situs solitus is understood as the normal arrangement of the thoracoabdominal viscera and in its counterpart, the situs inversus totalis (SIT), denotes a complete inversion of the viscera (mirror image). Finally, any disposition of the organs between these two entities will be called *situs ambiguous* or *situs transversus* (5).

Case Presentation

A 70-year-old female patient from another institution, with a history of smoking, in whom the disease debuted with abdominal pain in the right iliac fossa, weight loss, and constipation. Initial radiologic and endoscopic studies revealed adenocarcinoma of the sigmoid colon in a SIT (no initial studies are available). She underwent sigmoidectomy plus right colostomy and was given adjuvant treatment with chemotherapy. She was admitted to periodic annual follow-up. Chest x-rays were taken with findings of dextrocardia with right subfrenic gastric bubble (Figure 1), abdominal ultrasound with evidence of total inversion of solid and hollow viscera (Figure 2) and of large abdominal vessels associated with multiple para-aortic adenopathies (Figure 3). In view of these findings, a thoracoabdominal pelvic CT with double contrast was performed, which showed TIS with mediastinal and abdominal adenopathies (Figure 4), the latter forming conglomerates that encompass the aorta and compress the inferior vena cava (Figure 5). Adequate passage of the oral contrast medium to the colostomy was also observed (Figure 6)

Discusión

Situs inversus is a rare congenital anomaly in the population and these patients are often asymptomatic; no genetic predisposition for the entity is known and it has not been associated with neoplasms of the colon and rectum. Concomitant SIT has been documented with gastric and hepatic cancer (1, 6); however, its pathogenesis has not been established as such, which is a great challenge for the treating physician. In this particular case, the presence of a very frequent neoplasm coincides with a rare anatomical variant that constitutes more diagnostic and therapeutic challenges. The inclusion of the intra and retroperitoneal lymphatic chains towards the great vessels established the most important prognostic factor in the evaluation of the disease. Ignorance of lymphatic drainage pathways in a patient with this condition can bias staging and thus affect treatment efficacy and prognosis.

The early diagnosis of this entity allows an adequate approach to all the pathological conditions that the individual presents throughout his life, in which it is essential to know the laterality and, therefore, additional surgical planning is required (7).

Although patients diagnosed with SIT are asymptomatic, their relationship with certain clinical entities has been observed, the inverse location of the viscera may lead to an erroneous diagnosis if the TIS is not taken into consideration.

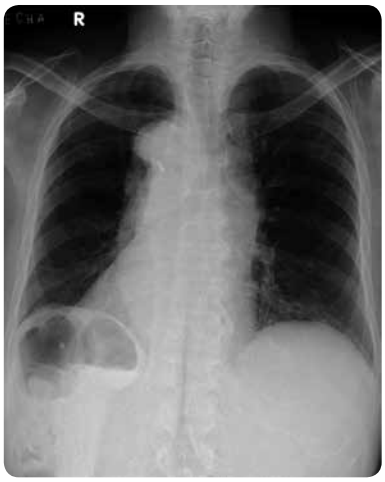

Figure 1. Chest X-ray PA: Dextrocardia with right subfrenic gastric bubble.

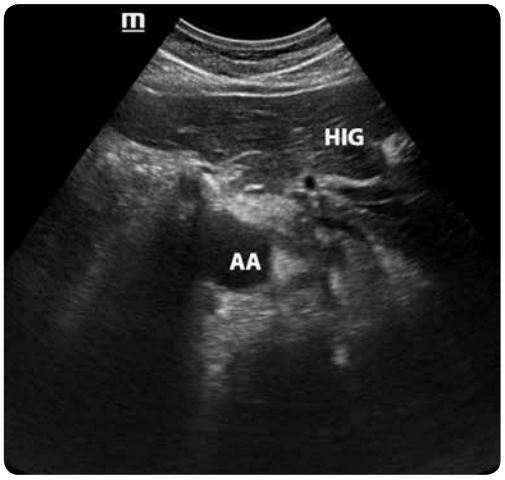

Figure 2. Abdominal ultrasound, cross section in epigastrium: inversion of abdominal organs. LIV: liver. AA: abdominal aorta.

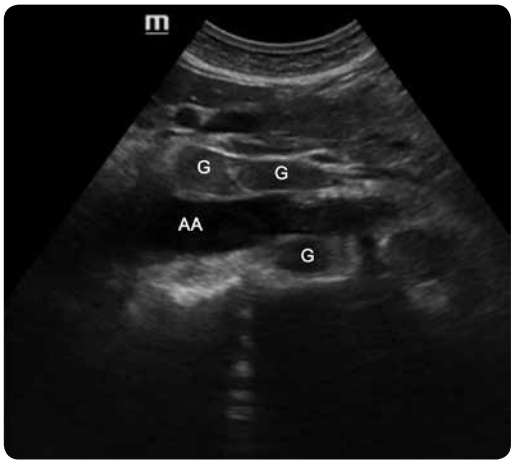

Figure 3. B-mode abdominal ultrasound, longitudinal cut at the height of the infrarenal aorta: multiple para-aortic adenopathies (G).

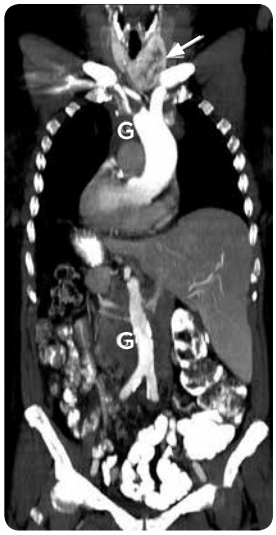

Figure 4. Thoracoabdominal pelvic CT with double contrast (MPR coronal): SIT with multiple mediastinal and abdominal adenopathies (G). Left thyroid nodule (arrow).

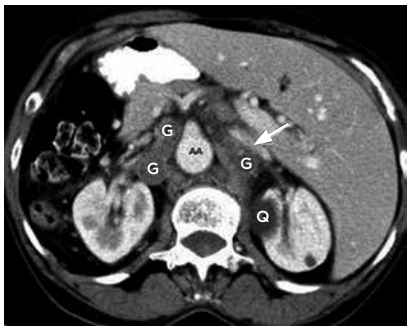

Figure 5. Thoracoabdominal pelvic CT with double contrast (axial cut at the height of the emergence of the superior mesenteric artery): A conglomerate of adenopathies (G) that encompass the abdominal aorta (AA) and compress the inferior vena cava (arrow). Simple cysts (Q) in the left kidney.

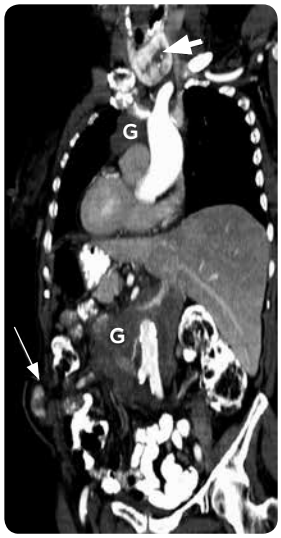

Figure 6. Thoracoabdominal pelvic CT with double contrast (coronal-oblical MPR): Right colostomy with adequate passage of oral contrast medium (thick arrow), adenopathies (G) and thyroid nodule (thin arrow).

Conclusions

The occurrence of colon cancer in a patient with SIT is a rare condition without this constituting a risk factor.

Diagnostic imaging plays an important role in the comprehensive assessment of disease, staging, therapeutic behavior, and possible complications in a SIT patient. The use of these technologies (X-rays, ultrasound and computed tomography) has allowed the margins of error of the procedures in these patients to be smaller and detectable in a timely manner. For this reason, the radiologist facilitates the work of the surgeon and the clinician in making decisions in this type of entities.

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Received for assessment: February 12, 2017
Accepted for publication: June 16, 2018