ABSTRACT

Situs inversus totalis is a rare autosomal recessive anomaly characterized by transposition of organs to the opposite site of the body. Its prevalence varies from 0.03% to 0.04%. The frequency of cholelithiasis in patients with situs inversus is similar to that in the general population. We performed cholecystectomy in a 52 years symptomatic female by left mini-paramedian incision who was unfit for laproscopic cholecystectomy due to associated co-morbid conditions. Diagnosis and treatment of cholelithiasis in such cases pose a challenge to the operating surgeon because of atypical clinical picture and due to the contralateral disposition of the visceral organs.

Keywords: Cholecystitis, Cholecystectomy, Cholilithiasis, Situs inversus totalis

INTRODUCTION

Situs inversus totalis is a rare clinical entity and was first reported by Fabricius in 1600. The genetic defect in the autosomal recessive pattern occurs within the second week of embryonic life. Incidence is equal in both genders. Situs inversus viscerum can be either total or partial. Situs inversitotalis (SIT), also called mirror image dextrocardia is characterised by the presence of the heart and stomach on the right side of the midline while the liver and gall bladder are present on the left side. The condition may be associated with other life threatening conditions like Kartagener’s syndrome, broncheictasis and other cardiac anomalies. The rarity of this disease and its varied presentations make diagnosis and management difficult. There is no evidence of higher incidence of cholelithiasis in SIT [1]. Pain of biliary colic is located in the epigastrium and left subcostal region and radiates to the left infrascapular region. The atypical mirror image not only needs great surgical skill but also meticulous pre-operative planing.

CASE REPORT

A 52-year-old female with more than one year history of left epigastric pain and swelling was referred to our hospital. The pain was aggravated by heavy meals. The frequency of pain radiating to inferior angle of left scapula had increased in the last one month associated with bouts of vomiting. She was a known asthamatic. General examination was unremarkable except for few rhonchi over B/l chest and apex beat was heard over right side of the chest. The pulse rate was towards lower side which was due to sinus bradycardia as confirmed by other investigations. There was rebound tenderness in left subcostal region with murphy’s sign positive. Laboratory investigations were normal including the coagulation profile. Chest X-ray revealed dextrocardia (Figure 1) and ultrasound abdomen showed left sided liver and gall bladder and right sided spleen (Figure 2). The size of gall bladder was 85×25 mm and the wall was oedematous. Dozens of stones measuring 2–5 mm were
present inside the gall bladder. Pancreas and C.B.D were within normal limits. CT scan showed situs inversus with multiple gall stones on left side (Figure 3). A diagnosis of acute on chronic cholecystitis with cholelithiasis with situs inversus totalis was made. She was planned for cholecystectomy (open) considering the co-morbid conditions as Asthama and Sinus bradycardia under general anaesthesia.

The approach was left upper para-median incision (2") with surgeon on the left side. Gall bladder was found to be moderately adhered with the surrounding structures and omentun wrapped it partially. Calot’s triangle anatomy was mirror image of normal. Cystic artery and cystic duct were ligated seperately after meticulous dissection. The gall bladder was separated from liver using blunt and electro-cautery dissection. Total procedure took 25 minutes and blood loss was minimal. Post-operative course was uneventful and patient discharged on the fifth post operative day after removal of the drain (Figure 4). Pathological examination confirmed cholecystitis with cholelithiasis.

**DISCUSSION**

The incidence of situs inversus totalis is in the range of 1:10,000–1:20,000. Incidence of cholelithiasis is same in SIT and normal patients. Due to contralateral disposition of the viscera, the diagnosis and surgical approach of these patients may pose a diagnostic dilemma. Most
patients present with left sided abdominal pain, however about 10% present with right sided pain. This may be attributed to the central nervous system which may not share in the general transposition [2].

About 40 cases of open cholecystectomy and 71 cases of lap cholecystectomy patients with SIT have been reported. Laparoscopic cholecystectomy has been the gold standard for treatment of cholelithiasis in SIT [3].

The usual difficulties encountered during the surgical procedure:

(a) Due to unusual anatomy, there are chances of iatrogenic injury.
(b) Common bile duct is located on right side of Calot’s triangle, this should be kept in mind during dissection.
(c) Dissection is technically difficult for right handed surgeons.

Since Campos and Sipes first reported a successful laparoscopic cholecystectomy in SIT in 1991 [4], a modified four-port laparoscopic cholecystectomy has also been reported as an optional method. Single port or single incision cholecystectomy confers some advantages for dissection with the right hand. The surgeon needs to reorient visual images and surgical steps in an anatomical field that has undergone 180 degree rotation [5].

CONCLUSION

Reverse anatomy is responsible for the difficulty in diagnosis and orientation during cholecystectomy. Complications can be minimized with preoperative appraisal of abnormalities, of vascular and anatomical structures with C-T angiogram. Robotics may reduce difficulties in future.

REFERENCES
1. Pathak KA, Khanna R, Khanna NN. Situs inversus with cholelithiasis. J Postgrad Med 1995 Apr–Jun;41(2):45–6.
2. Heimann T, Sicular A. Acute cholecystitis with situs inversus. N Y State J Med 1979 Feb;79(2):253–4.
3. Puglisi F, Troilo VL, De Fazio M, et al. Cholecystectomy in situs viscerum inversus totalis. Does laparoscopy increase the pitfalls? Chir Ital 2006 Mar–Apr;58(2):179–83.
4. Campos L, Sipes E. Laparoscopic cholecystectomy in a 39-year-old female with situs inversus. J Laparoendosc Surg 1991;1(2):123–5.
5. Jesudason SR, Vyas FL, Jesudason MR, Govil S, Muthusami JC. Laparoscopic cholecystectomy in a patient with situs inversus. Indian J Gastroenterol. 2004 Mar–Apr;2(2):79–80.

Author Contributions
Govind Trivedi – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published
Rajeev Bhargava – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published
Satish Gupta – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published
Devashish Singh – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor of Submission
The manuscript is not, either in part or whole, under active consideration by any other journal, will not be submitted for review to another journal until IJCRI makes a copy or electronic format.

Source of Support
None.

Consent Statement
Written informed consent was obtained from the patient for publication of this case report.

Conflict of Interest
Author declares no conflict of interest.

Data Availability
All relevant data are within the paper and its Supporting Information files.

Copyright
© 2018 Govind Trivedi et al. This article is distributed under the terms of Creative Commons Attribution License which permits unrestricted use, distribution and reproduction in any medium provided the original author(s) and original publisher are properly credited. Please see the copyright policy on the journal website for more information.
