Laparoscopic adrenalectomy in a patient with situs inversus levocardia

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Videosurgery Miniinv 2012; 7 (3): 213-215
DOI: 10.5114/wiitm.2011.25973

Abstract

The article presents a case of an adrenal adenoma (Conn's syndrome) in a 50-year-old man with situs inversus with levocardia. Laparoscopic adrenalectomy was performed and the patient made a full recovery. It has been concluded that diagnostic assessment by means of imaging techniques providing details of the organ anatomy and the experience of the medical team are the key factors determining the outcome of such surgery.

Key words: *situs inversus, Conn's syndrome, laparoscopic adrenalectomy.*

Case report

A 50-year-old obese patient with hypertension history (14 years), symptomatic hypokalaemia and diabetes mellitus type 2 treated with oral medications for 14 years presented in our department with an adrenal tumour on the right side of the spine.

The patient had a history of situs inversus with levocardia. The condition was first diagnosed 35 years earlier during a right flank laparotomy over McBurney's point due to suspected acute appendicitis. The appendix and the caecum were found to be situated in the left abdomen.

Moreover, there was evidence of a thyroid tumour. Biopsy revealed its benign character and the level of hormones indicated euthyreosis. Laboratory findings suggested hyperaldosteronism and other hormonal disorders were excluded.

Prior to the scheduled adrenalectomy in our department, a computed tomography (CT) angiography was made to view the anatomical structures and to determine where the left suprarenal vein drained. Both veins were found to empty into the renal veins (Figures 1 and 2).

Lateral peritoneal laparoscopy with four trocars was performed. The abdomen was insufflated through a minilaparotomy on the right side, under the rib cage, in the axillary midline. Malrotation was confirmed and involved the stomach, intestines, kidneys, pancreas, liver and spleen.

The spleen was sizeable, in the shape of a horseshoe, with the hilum directed laterally. A second spleen was found near the lower splenic pole. The sizeable spleen dislocated the left hepatic lobe upwards and to the left. The space between the lower splenic edge, the right upper renal pole and the pancreas was opened in the direction of the inferior vena cava.

The pancreas was enlarged, tender and positioned in the midline. The left adrenal gland with the

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tumour was found to be located in the left renal adipose capsule on the upper pole, medially – posteriorly, between the lower edge of the reversed spleen, its vessels and the pancreatic tail.

Due to the gland location as well as the suprarenal drainage pattern, a relatively large portion of the renal vein and a sizeable part of the adrenal gland had to be separated. The suprarenal vein was identified situated medially on the inferior-anterior adrenal edge and then ligated.

The specimen was placed in an Endocatch and then extracted through the body layers. A drain was left in the adrenalectomy cavity and the specimen was submitted for histopathological examination. This showed an adrenal gland (7 cm × 4.5 cm × 5 cm) with a solid tumour (diam. 1.5 cm).

No complications occurred during the operation or in the perioperative period. The drain was removed the day after the procedure. The patient was discharged on postoperative day 3 in a good overall condition.

The postoperative wounds healed by first intention. Moreover, the patient now needed only 2 (not 4) types of hypotension medication, administered in lower doses. The patient no longer needed either potassium supplements or potassium-sparing diuretics.

Discussion

Situs inversus with dextrocardia and situs inversus with levocardia are rare conditions. However, one should consider them in diagnostics and treatment of thoracic and abdominal diseases, particularly those of acute character. This may prevent diagnostic failures in individuals with situs inversus, such as myocardial ischaemia not recognized in electrocardiography (ECG) recordings or unnecessary operations such as a right flank laparotomy due to suspected appendicitis.

Nowadays the diagnostic process has been facilitated due to the increasing accessibility and improvement of imagining techniques such as ultrasonography, X-ray and computed tomography (CT). This allows the medical team to work out an appropriate surgical strategy and prepare themselves thoroughly for an unusual operation.

We used the regular left laparoscopic adrenalectomy approach and equipment. The operating theatre, however, was set up as for right adrenalectomy. The peritoneal adhesions that formed following the exploratory laparotomy had to be broken down.

We found neither English nor German publications concerning laparoscopic adrenalectomy in situs inversus. Only a few laparoscopic procedures have been reported in patients with this condition, such as cholecystectomy, appendectomy, bariatric, pul-

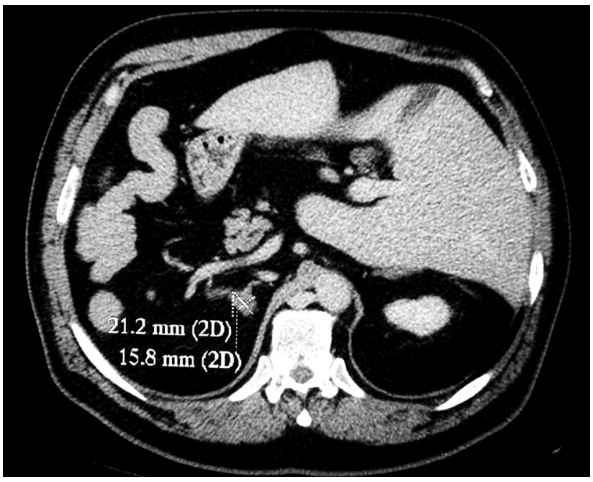

Figure 1. Left adrenal tumour situated on the right side of the spine

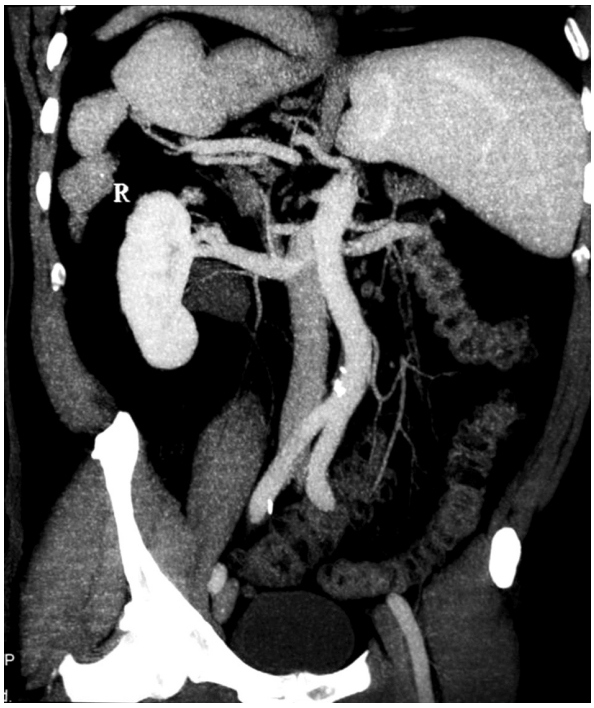

Figure 2. Nephrogram. Left adrenal vein emptying into the renal vein close to the inferior vena cava

monary and oesophageal surgery [1, 2]. Laparoscopic cholecystectomy seems to be the commonest surgical procedure carried out in situs inversus patients, with 38 cases described to date.

In situs inversus, the gall bladder is situated in the mirror image of its normal location. Hence, identification and exposure of Callot's triangle may pose difficulty for the surgeon [3].

Adrenal glands, as opposed to the bladder, are diastereomeric, not enantiomeric. In other words, the gland and the tumour are not mirrored from their normal positions.

In our patient, there occurred not only displacement but also organ malrotation, as well as unique vascular arrangement. Thus the operation lasted longer than a regular laparoscopic adrenalectomy. The procedure itself and the postoperative period were uncomplicated. There was evidence of regression of Conn's syndrome symptoms, which was our goal. The cosmetic result was also satisfactory, but it would probably be too risky to use the SILS method in this particular case [4, 5].

References

1. Catheline JM, Rosales C, Cohen R, et al. Laparoscopic sleeve gastrectomy for a super-super obese patient with situs inversus totalis. Obes Surg 2006; 16: 1092-5.
2. Jobanputra S, Safar B, Wexner SD. Laparoscopic diverticular resection with situs inversus totslis (SIT): report of a case. Surg Innov 2007; 14: 284-6.
3. Docimo G, Manzi F, Maione L, et al. Case report: laparoscopic cholecystectomy in situs viscerum inversus. Hepatogastroenterology 2004; 51: 958-60.
4. Cywiński J, Kuzdak K, Kołomecki K. One-incision approach (SILS) for retroperitoneal videoscopic adrenalectomy. Videosurgery Miniinv 2010; 5: 70-1.
5. Łosin M, Czauderna P, Gołębiewski A, Stefanowicz J. Single incision laparoscopic adrenalectomy – initial experience. Videosurgery Miniinv 2010; 5: 104-6.