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Left-Sided Inferior Vena Cava with Pancreatic Head Cancer: A Case Report

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Authors' contributions

This work was carried out in collaboration among all authors. Author KH designed the study, collected all information, and wrote the first draft of the manuscript and the end manuscript. Authors MB, KY, NF, FB, AE and AF managed the literature searches and aided with the final manuscript. All authors read and approved the final manuscript.

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Case Report

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ABSTRACT

Introduction: Transposition of the inferior vena cava (IVC) is a congenital anomaly of the great vessels. Left IVC is a rare malformation, it is observed in about 0.04% to 0.5% of the population.
Presentation of Case: We report the case of a 64-year-old patient, with no particular pathological antecedent, who presented a tumor of the head of the pancreas and whose radiological examinations had shown the presence of the tumor with a left variant of the inferior vena cava.
Discussion: Left transposition of the IVC can be described as a "mirror image" of the normal IVC It is secondary to a disturbance of the venous development process and is often discovered incidentally during radiological examinations. CT scan is the examination of choice to detect these vascular variations with a sensitivity and specificity for arterial anomalies of 91.6 to 98.2% and venous anomalies of 96.7 to 90% respectively.
Conclusion: It must be reported by radiologists in order to avoid hemorrhagic complications during any surgery of the retroperitoneal space.

Keywords: Left-sided inferior vena cava; pancreatic head cancer; congenital anomaly; CT scan; case report.

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1. INTRODUCTION

Anomalies of the inferior vena cava affect approximately 3% of the population, the left variant of the IVC ranks second after duplicity, and is observed in approximately 0.04% to 0.5% of the population [1]. Most often, these anomalies are discovered incidentally during radiological examinations. The rarity of this anomaly should not prevent surgeons from being aware of it to prevent iatrogenic lesions during surgery. This work has been reported in line with the SCARE criteria [2].

2. CASE REPORT

The patient was a 64-year-old man who had presented a clinical cholestasis syndrome evolving for three months, with weight loss and a deterioration of the general state. On clinical examination, the patient was polypneic at 22 cycles/minute, tachycardic at 110 beats/minute with a stage 3 of the WHO performance status index and a BMI of 18. The abdominal examination revealed a palpable gallbladder with slight epigastric sensitivity. On radiological examination, the thoraco-abdomino-pelvic computed tomography (CT) scan showed a tumor of the head of the pancreas with invasion of the lower bile duct and dilatation of the bile ducts intra- and extra-hepatically, as well as a left variant of the inferior vena cava and a thrombosis of the right common iliac artery (Fig. 1 and 2). The biological workup showed biological cholestasis: total bilirubin elevated to 180 mg/l, conjugated bilirubin elevated to 136mg/l, alkaline phosphatase elevated to 860 IU/l and gamma glutamyl transferase elevated to 605 IU/l; with elevated tumor markers: CEA = 35 µg/l, CA 19-9 = 78 U/L. In view of the patient's deteriorating general condition, a drainage of the main biliary tract by a Kehr drain and a cholecystectomy were performed. Surgical exploration revealed the presence of a tumor of the head of the pancreas, which was biopsied, with a left component of the inferior vena cava.A cephalic duodenopancreatectomy was programmed after general condition amelioration, but the patient passed away one month post operatory.

3. DISCUSSION

Congenital malformations of the retroperitoneal vascular system and the renal vessels are not well known, yet anomalies of the IVC and its tributaries have been reported since 1793 [3]. Left transposition of the IVC can be described as a "mirror image" of the normal IVC, the sub-renal portion of the IVC lies to the left of the abdominal aorta and thus empties into the left renal vein, then joins the right renal vein by crossing the midline anterior to the aorta and it then returns to its original course, along the right border of the aorta [4].

In the human embryo, during the early period of embryogenesis, the venous drainage of the left and right sides of the body occurs independently of each other, after the regression of the majority of the left supracardinal veins and the veins of the interconnection between the sacrocardinal veins, the entire venous drainage of the left lower limb occurs to the right side, thus forming the inferior vena cava [5]. In the case of the left variant of the IVC, the left supracardinal vein persists and the right vein regresses [6]. Abnormalities of the IVC usually occur in early embryogenesis around 6-10 weeks of gestation, among these abnormalities are left inferior vena cava, duplicity and retro-aortic left renal vein.

Chuang et al. classified congenital anomalies of the IVC in the post-renal segment into four types [7].

I. Post-renal Segment:

- Type A: Persistent right posterior cardinal vein ("retrocaval ureter ").
- Type B: Persistent right supracardinal vein ("normal inferior vena cava").
- Type C: Persistent left supracardinal vein ("left inferior vena cava").
- Type BC: Persistent right and left supracardinal veins ("double inferior vena cava").

II. Renal segment: Persistent renal venous collar ("circumaortic left renal vein").

III. Pre-renal segment: Absence of hepatic segment ("continuation of the azygos vein").

Classification of congenital anomalies of the inferior vena cava (chuang) [7].

Most anomalies of the inferior vena cava are asymptomatic, discovered incidentally on radiological examination, intraoperatively or at autopsy. These variants can sometimes be responsible for clinical syndromes: thrombosis of the venous anomaly, extrinsic urinary

obstruction, nutcracker syndrome, pelvic congestion [8].

CT scan is the examination of choice to detect these vascular variations with a sensitivity and specificity for arterial anomalies of 91.6 to 98.2% and venous anomalies of 96.7 to 90% respectively, with some trap images such as left ureteral dilatation or adenopathy. Advances in imaging modalities have greatly facilitated the diagnosis of vascular malformations, contrast-enhanced spiral CT can reliably reveal venous anomalies, 3D CT reconstruction and/or MRI can provide additional detail if needed [9].

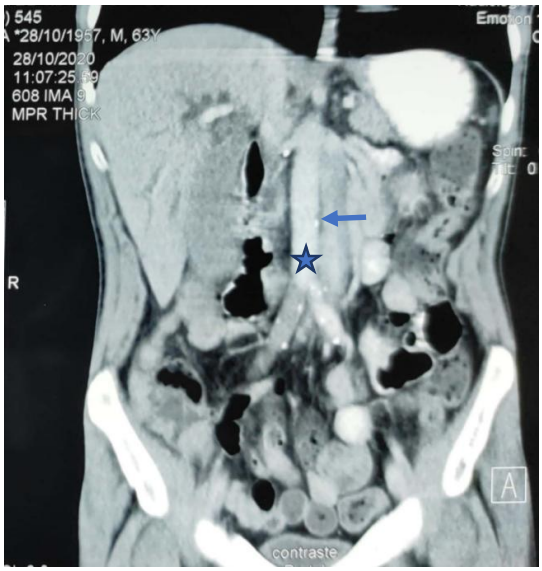

Fig. 1. Coronal scan section through the vascular axis, inferior vena cava (arrow), abdominal aorta (star)

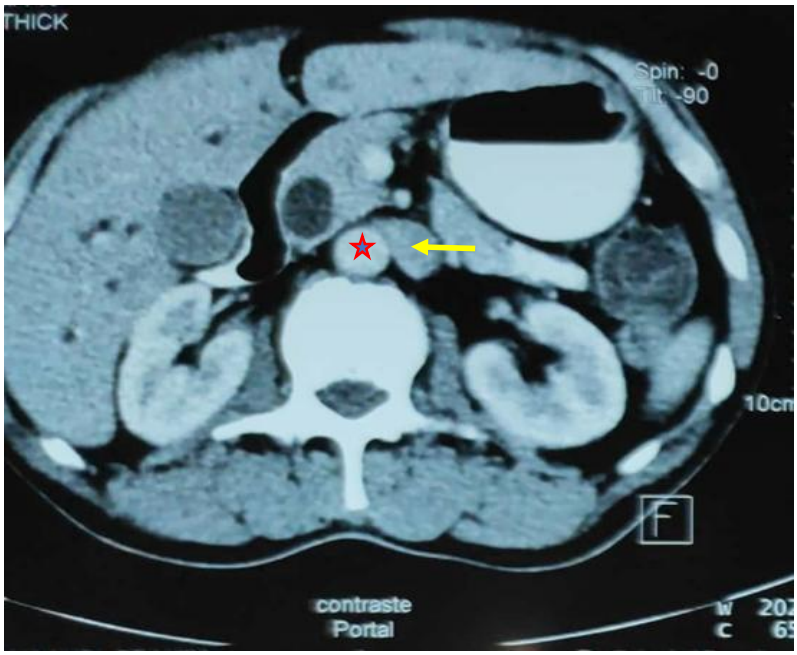

Fig. 2. Cross-sectional CT scan showing the left position of the inferior vena cava; abdominal aorta (star), inferior vena cava (arrow)

Knowledge of inferior vena cava abnormalities is very important for surgeons especially in retroperitoneal surgery because they can be misdiagnosed as para-aortic lymphadenopathy, tumor, or dilated gonadal vein [10] , furthermore, abnormal vessels are usually more dilated and can be injured easily and cause iatrogenic damage to the vein and result in hemorrhage [3].

4. CONCLUSION

The left inferior vena cava is a rare anatomic variation that presents a preoperative challenge for surgeons, hence the need to know about it to prevent damage from its inadvertent injury. Imaging modalities are essential to prevent unexpected surgical complications.

CONSENT

As per international standard or University standard written patient consent has been collected and preserved by the authors.

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Forster J, Biyani CS, Weston PMT. A gentle reminder in the laparoscopic era left-sided inferior vena cava. Int Urol Nephrol. 1 déc 2006;38(3):439‑42.
2. Agha RA. The scare 2020 guideline: Updating consensus Surgical case report (SCARE) Guidelines. 23.
3. Elfeshawy MS. Bilobed spleen, transposition of the inferior vena cava and Riedel lobe: an extremely rare imaging finding in the same case. BJR Case Rep. Juin. 2019;5(2):20180091.
4. Khamanarong K, Woraputtaporn W, Teerakul S, Prachaney P, Amarttayakong P. Left Sided Inferior Vena Cava: A Case Report. 2010;93(8):3.
5. Rajabnejad Y, Aliakbarian M. Left-Sided Inferior Vena Cava Encountered During Organ Retrieval Surgery: Report of Two Cases. :4.
6. Dar GM, Ahmed S, Mirza A. Organ Retrieval Surgery: Management of Left-sided Inferior Vena Cava. J Coll Physicians Surg--Pak JCPSP. déc 2020;30(12):1358‑9.
7. Chuang VP, Mena CE, Hoskins PA. Congenital anomalies of the inferior vena cava. Review of embryogenesis and presentation of a simplified classification. Br J Radiol. 1 avr 1974;47(556):206‑13.
8. Matsunaga M, Fukahori M, Ushijima T, Miwa K. Left-sided inferior vena cava. Case Rep. 8 juin 2015;2015(jun08 1):bcr2015211268‑bcr2015211268.
9. Madhavan K, Jain S, Shridhar P, Bhirud D, Patidar Y, Jain V. Left Inferior Vena Cava from the Perspective of Laparoscopic Donor Surgeon: Anatomic Considerations and Surgical Implications. Indian J Nephrol. juin 2019;29(3):197‑9.
10. Milani C, Constantinou M, Berz D, Butera JN, Colvin GA. Left sided inferior vena cava duplication and venous thromboembolism: case report and review of literature. J Hematol OncolJ Hematol Oncol. 2 déc 2008;1:24.

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