Case Report

Left Sided Inferior Vena Cava: A Case Report

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Objective: To report a case of left sided inferior vena cava (IVC).

Material and Method: The authors carried out the standard dissection survey of 939 embalmed cadavers between 1974 and 2008.

Results: The authors encountered a case of left sided IVC in a male donated cadaver aged 65 years at decease. The IVC formed behind the left common iliac artery at the L5 vertebra and coursed proximally on the left of the aorta until it reached the left renal vein and then crossed anterior to the abdominal aorta to assume the normal right side. At the point of crossing, it received the left renal vein. The right renal vein emptied into the IVC on the right side.

Conclusion: In the era of laparoscopic urological surgery, preoperative diagnosis of this uncommon but important entity is essential to prevent unwarranted surgical mishaps.

Keywords: Left sided inferior vena cava, Common iliac vein

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Results

The left sided IVC was found (Fig. 1, 2). After removing the loose connective tissue and fat, the authors could see clearly that the common iliac veins from both sides joined behind the left common iliac artery on L5 vertebra to form the distalmost segment of the IVC. The left IVC, so formed, ran superiorly along the left side of the abdominal aorta to the point of entrance to the IVC of the left renal vein. From this point, the IVC crossed the midline obliquely upward to the right side, assuming its normal relationship to the aorta. The left suprarenal vein emptied into the IVC. The right renal and suprarenal veins emptied into the right side of IVC. The superior and inferior mesenteric arteries are above and below the crossing segment of the IVC, respectively. Because of the variation, the right testicular vein emptied into the right renal vein; the left testicular vein into the left sided IVC. The remainder of the caval pathway was normal and after receiving the hepatic vein, it entered into the right atrium as its normal site.

Discussion & Conclusion

The left sided IVC is proposed to be compatible with life. Becker(5) found a case of the left sided IVC from autopsy. Nasser et al(4) found three
cases of the left sided IVC in 750 kidney donors for transplantation. The incidence in the present series is 0.4% by way of laparoscopic donor nephrectomy. Honma et al(6) also found one in 456 cases (0.22%). This report of Khon Kaen University, Faculty of Medicine, Department of Anatomy is even smaller, only 1 in 939 cases (0.1%), but comparable though secured by different method. The caval pathway as reported by Becker, Nasser et al, Honma et al and the present study was not different.

In the normal development of the IVC of about 4-7 week embryo, the right subcardinal vein and the iliac anastomosis of subcardinal veins developed to be the distal segment of the IVC(2). However, in the present case the left subcardinal vein persisted, instead of obliterated, and developed into the left sided IVC. The cross segment of this case, IVC persisted from the intersubcardinal anastomosis, which became renal segment of IVC, to connect with the hepatic segment of IVC. Now, the IVC was in the normal position, connecting with the cardiac segment, which was the remainder of the right vitelline vein to become the uppermost segment of IVC, which was emptying into the inferior part of the right atrium.

The major clinical significance of this anomaly is a potential for misdiagnosis as a left sided paraaortic adenopathy. Surgical procedures involving the retroperitoneum are more complex with a left sided IVC, the possibility of confusion of the anomaly with lymphadenopathy, tumor, or a dilated gonadal vein may lead to severe iatrogenic hemorrhage(7-9).

Furthermore, in the process of laparoscopic donor nephrectomy, the practicing physicians and surgeons should be well aware of this mal-positioned variation of the left sided IVC for the management of aneurysm of the abdominal aorta and common iliac arteries and other relating organs in the abdomen and pelvis to achieve a successful operation.

In conclusion, the authors have reported a case of left sided IVC with the incidence of one out of 939 cadavers (0.1%) in the male cadaver. The surgeons performing kidney transplants or working in the full-of-surprise abdomen must keep this left sided IVC in mind.
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References