Section: clinical anatomy

A common lumbar vein formed by union of left second lumbar and bilateral third lumbar veins: A case report

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Abstract:

Introduction:

Lumbar veins drain blood from the abdominal wall and vertebral venous plexus into inferior vena cava, ascending lumbar veins, renal veins or lumbar azygos vein.

Case report:

We report the presence of a common lumbar vein which received the right and left third lumbar veins and left second lumbar vein. It passed in front of the body of third lumbar vertebra and drained into the posterior aspect of inferior vena cava.

Conclusion:

During surgical procedure of lumbar region such as the anterior approach of lumbosacral and lumbar disc spaces, injury to such a large common lumbar venous trunk may occur leading to disastrous bleeding complications and this can be avoided by prior radiographic and imaging studies.

Key words: lumbar vein, inferior vena cava, variation, retroperitoneal

Introduction:

Lumbar veins are present in lumbar region of the posterior abdominal wall. There are four pairs of lumbar veins which collect blood from the lumbar muscles, skin and from the posterior, lateral and anterior abdominal wall including the parietal peritoneum. These lumbar veins also drain the blood from vertebral venous plexus and are interconnected by the longitudinally running ascending lumbar vein. The first lumbar vein may join the second lumbar vein, the ascending lumbar vein or the lumbar azygos vein. The second lumbar vein is variable and may drain into
inferior vena cava, ascending lumbar vein or lumbar azygos vein. Third and fourth lumbar veins are consistent in their course and drain into posterior aspect of inferior vena cava.\textsuperscript{1} The tributaries of lumbar veins collecting blood from the anterior abdominal wall anastomose with the branches of inferior and superior epigastric veins which drain blood into superior vena cava, and thus the lumbar veins are important for the venous drainage of lumbar region in case of inferior vena caval obstruction.\textsuperscript{1} We discuss the possible clinical implications of an unique common lumbar vein in this report as a similar case has not been reported earlier to the best of our knowledge.

\textbf{Case Report:}

During routine dissection classes for undergraduate medical students, we observed a common lumbar vein in a male cadaver aged about 65 years. The left second lumbar, left third lumbar and the right third lumbar veins joined to form a common lumbar vein in front of the body of third lumbar vertebra. The common lumbar vein had a diameter of 1 cm. It coursed upwards and to the right, (1 cm distance) and opened into the posterior aspect of the inferior vena cava (Figure 1). The termination of other lumbar veins was normal. There were no other visible vascular or visceral anomalies in the body.
Figure 1. Dissection of the posterior abdominal wall showing the major vessels.

(RK – right kidney; LK – left kidney; IVC – inferior vena cava; AA – abdominal aorta; IMA – inferior mesenteric artery; LU – left ureter; CLV – common lumbar vein; LSLV – left second lumbar vein; LTLV – left third lumbar vein; RTLV – right third lumbar vein; LFLV – left fourth lumbar vein; 2, 3 and 4 – left second, third and fourth lumbar veins)

Discussion:

Reports on lumbar vein variations and their surgical importance are scanty. The reported variations include their enlargement and unusual terminations. A case of abnormally enlarged lumbar vein along with variations in the formation of left renal vein has been
reported. Bandopadhyaya and Saha have reported about a vein coming from the psoas major muscle, likely to be a lumbar vein, being hooked by the left testicular artery. Jyothsna et al have reported multiple vascular anomalies involving testicular and suprarenal arteries along with a variant common venous trunk formed by the left suprarenal vein, second left lumbar vein, and left testicular vein which drained into the left renal vein. In a study conducted by Jack et al, 3 left lumbar veins terminated into inferior vena cava in 44% of cases and 2 right lumbar veins opened into the inferior vena cava in 37% of cases. They also documented the entry of one of the lumbar veins into the left renal vein in 43% of cases. In a case study by Chimmalgi et al, a left lumbar vein was found to be draining into the left renal vein in one case and a pair of lumbar veins was found crossing the anterior surface of the left kidney before draining into the left renal vein in another case. In an extensive study conducted by Li et al, the left renal vein received one lumbar vein in 47% of cases, and two lumbar veins in 32.8% of cases. Raheem et al have reported lumbar vein as a posterior tributary of the left renal vein in ten out of eleven cases studied by them.

The present case has a unique variation in which the left second, third and the right third lumbar veins joined to form a common trunk of lumbar veins which ran upwards and opened into the posterior aspect of the inferior vena cava. To the best of our knowledge, such a variation has not been reported earlier.

Embryologically, vascular variations occur when an unusual vessels persists or a normal vessel disappears in early embryonic period by the process of selection and persistence of definitive adult vessels.

Anterior surgical approaches to the lumbosacral disc spaces even with minimally invasive techniques can cause major vessel injuries. The variant venous trunk in the current case was situated in front of the vertebral column and can cause disastrous bleeding due to its large size.
Therefore, prior radiographic and imaging studies may be necessary to identify the variant vessel and to avoid potentially grievous vascular complications during the surgical procedures for anterior approach to the lumbar disc spaces and in retroperitoneal lymph node dissections.

References:
