Incidence of Double Left Suprarenal Veins in Thai Cadavers

Kimaporn Khamanarong MD*,
Tarinee Sawatpanich PhD*, Somsiri Ratanasuwan PhD*,
Anucha Ahooja MD**, Kittisak Sawanyawisuth MD, PhD***,****

** Department of Anatomy, Medicine, Faculty of Medicine, Khon Kaen University, Khon Kaen, Thailand*
*** Department of Radiology, Medicine, Faculty of Medicine, Khon Kaen University, Khon Kaen, Thailand*
**** Department of Medicine, Faculty of Medicine, Khon Kaen University, Khon Kaen, Thailand*
***** Sleep Apnea Research Group and Research Center in Back, Neck, Other Joint Pain and Human Performance (BNOJPH), Khon Kaen University, Khon Kaen, Thailand*

The variants of left suprarenal vein is approximately 3% in the Western countries. There is limited data on incidence and types of left suprarenal vein variants in Thais. This study aimed to evaluate the incidence of suprarenal vein variants in Thai cadavers. We evaluated suprarenal veins of 175 cadavers at Department of Anatomy, Faculty of Medicine, Khon Kaen University. Out of 175 cadavers, 4 cadavers had double left suprarenal veins (2.29%). Both tributaries drained into the left renal.

Keywords: *Suprarenal vein, Variants, Adrenal gland*

J Med Assoc Thai 2017; 100 (Suppl. 6): S249-S251
Full text. e-Journal: *http://www.jmatonline.com*

The suprarenal or adrenal glands are located on the medial part of the superior pole of the kidneys bilaterally. The suprarenal glands are supplied by the superior, middle, and inferior suprarenal arteries, which arise from the inferior phrenic artery, abdominal aorta and the renal artery respectively[1]. The venous drainage from each gland usually drains by one vein. The right suprarenal vein (RSRV) is very short and drains the blood into the inferior vena cava, whereas the left suprarenal vein (LSRV) generally joins with the inferior phrenic vein to drain the blood to the left renal vein.

Studying the variant of left suprarenal vein is clinically important to the renal transplantation, laparoscopic adrenalectomy and adrenal venous sampling. Laparoscopic adrenalectomy has become the technique of choice in adrenal surgery, which principal complication of this surgery is intra-operative hemorrhage[2,3]. Adrenal venous sampling is employed as the gold standard test to differentiate between unilateral adrenal adrenoma and bilateral adrenal cortical hyperplasia, which are the most common causes of primary hyperaldosteronism[4]. Knowledge of variant of adrenal venous anatomy, is therefore important to ensure a successful adrenal venous sampling procedure, and during laparoscopic adrenalectomy.

Correspondence to:
Sawanyawisuth K, Department of Medicine, Faculty of Medicine, Khon Kaen University, Khon Kaen 40002, Thailand.
Phone & Fax: +66-43-363664
E-mail: kittisak@kku.ac.th

Material and Method

This study was carried on Department of Anatomy, Faculty of Medicine, Khon Kaen University. We studied 175 embalmed cadavers, (during 2013-2015), with age between 19 and 90 years. The dissection of the kidney and the adrenal gland was done according to standard technique. The study protocol was approved by the ethic committee in human research, Khon Kaen University (HE581173).

Results

Out of 175 cadavers, 4 cadavers had double left suprarenal veins (2.29%). Both tributaries drained into the left renal vein (Fig. 1). No abnormal suprarenal artery was detected in any cadavers.

Discussion

The variants of left suprarenal vein have been previously reported. These variants include duplication of the main vein, double suprarenal vein, and duplication of the right and left adrenal vein[5-7]. These reports are all from the Western countries. This study showed that

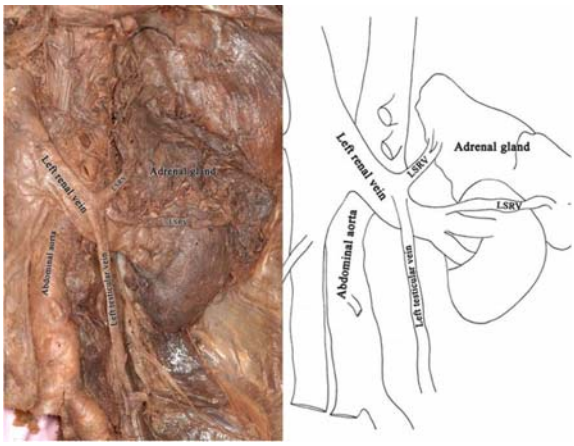

Fig. 1 show double left suprarenal veins (LSRV) drain into left renal vein by picture from a Thai cadaver and schematic picture.

double left suprarenal vein may also be found in the Asian population. The prevalence of this variant is similar to the previous report; approximately 3%[7].

The adrenal veins are most relevant clinically in diagnosis of primary hyperaldosteronism. Adrenal vein sampling is the gold standard in diagnosis of primary adenoma, which is surgically curable, or bilateral adrenal hyperplasia, which is medically managed[8-10]

In adrenal venous sampling procedure, it is important to review anatomy of suprarenal veins from thin slices CT scan prior to the intervention. Catheter selection was determined according to the anatomy of the suprarenal veins. The approach to the left suprarenal vein will have to be made under different position according to the position of the venous anatomy. Detailed knowledge of the variation of double left suprarenal veins is crucial and would be effective in the procedural planning and sampling interpretation[11]

In laparoscopic adrenalectomy procedure, it is important to know about anatomical variations to limit the risk of massive intra-operative hemorrhage, since excessive traction on an adrenal gland without control of the principal adrenal vein, on the left, can do injury to the renal vein or the IVC[1].

Conclusion

The incidence of left suprarenal veins was 2.29% in Thai cadavers. Understanding this incidence is important to prevent bleeding from the adrenal gland during laparoscopic surgery, and a successful procedure of adrenal vein sampling. The results of this study may apply for other Asian populations.

What is already known on this topic?

The variants of left suprarenal vein are approximately 3% in the Western countries.

What this study adds?

The variants of left suprarenal vein in Thais are slightly lower than the Western countries at 2.29%.

Acknowledgements

We would like to express great thanks for our cadaveric bodies who donated their bodies for valuable medical learning and research; grant of Faculty of Medicine, Khon Kaen University, Thailand (Grant Number RG59301) and the Center of Cleft Lip-Cleft palate and Craniofacial Deformities, Khon Kaen University under Tawanchai Royal Grant Project.

Potential conflicts of interest

None.

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อุบัติการณ์ของเส้นเลือดดำชนิด double left suprarenal ในอาจารย์ใหญ่ชาวไทย

กิมาพร ขมะณรงค์, ธาริณี สวัสดิ์พาณิชย์, สมศิริ รัตนสุวรรณ, อนุชา อาสูยา, กิตติศักดิ์ สวรรยาวิสุทธิ์

ในประเทศตะวันตกมีอุบัติการณ์ของหลอดเลือดดำ left suprarenal ที่มีความแปรปรวนประมาณร้อยละ 3 แต่ข้อมูลเกี่ยวกับอุบัติการณ์และชนิดของหลอดเลือดดำ left suprarenal ที่มีความแปรปรวนในชาวไทยมีอยู่อย่างจำกัด การศึกษานี้ต้องการศึกษาอุบัติการณ์ของหลอดเลือดดำชนิด double left suprarenal ในร่างอาจารย์ใหญ่ชาวไทย โดยได้ทำการศึกษาในร่างอาจารย์ใหญ่จำนวน 175 ท่าน ที่ภาควิชากายวิภาคศาสตร์ คณะแพทยศาสตร์ มหาวิทยาลัยขอนแก่น จากร่างอาจารย์ใหญ่จำนวน 175 ท่าน พบว่า มี 4 ท่านที่มี double left suprarenal veins (2.29%) โดยหลอดเลือดดำทั้งสองเส้นไหลลงสู่หลอดเลือดดำ left renal ดังนั้นอุบัติการณ์ของหลอดเลือดดำชนิด double left suprarenal ในอาจารย์ใหญ่ชาวไทยคือ ร้อยละ 2.29