Case report

VARIATIONS OF THE BILATERAL TESTICULAR VEINS

Nikolay Hr. Kyuchukov, Stilyanka D. Yochkova

Department of Anatomy, Histology and Embryology
Medical University - Pleven

Summary

Different variations of the testicular veins have been described in the literature. They can be isolated or to coexist with other abnormalities. Important anatomical aspects are: 1) number of testicular veins, 2) the location of vein termination, 3) termination angle. We described a case of testicular veins variations found during routine anatomical dissections. In our case we had three right testicular veins (lateral, medial and middle) and two left testicular veins (lateral and medial). Medial and middle right testicular veins after short route combined and drained at the acute angle between the right renal vein and the inferior vena cava. The lateral testicular vein terminated at the right renal vein at a right angle. On the left side there were two testicular veins – lateral and medial, both terminated in the left renal vein at a right angle. Anatomic variations of the testicular vein are frequent, especially concerning the number of left side gonadal veins and the angle of termination of these veins. They can play an important role in pathogenesis of the varicocele. Variations of the right testicular vein were very rare and can be associated with the isolated cases of right varicocele.

Key words: testicular veins, varicocele

Introduction

The testicular veins return blood from the testes. Variations of the testicular veins may influence blood flow, temperature and spermatogenesis of the testis and result in some pathological conditions as varicocele, which are regarded as the causes of male infertility [1, 2]. Duplication and atypical drainage of the testicular veins have been reported from other authors [3, 4]. Right testicular vein draining into right renal vein rather than inferior vena cava was reported in 2 out of 150 cadavers dissected [3]. Favorito et al (2007) [4] reported that one right testicular vein occurred in 85% and 2 veins in 5% of the cases. One left testicular vein occurred in 82%, two veins in 15%, three veins in 2% and four veins in 1% of the cases.

We present a rare case with variations of the number and drainage in the bilateral testicular veins. The knowledge of detailed anatomy is helpful in understanding the clinical condition and the various pathological situations related to the testicular veins such as varicocele.

Case report

Variations of the bilateral testicular veins were observed during routine anatomical dissections of a male cadaver.

Corresponding Author:
Kyuchukov Hr. Nikolay
Department of Anatomy, Histology and Embryology
Medical University - Pleven
1, St. Kliment Ohridski str.
Pleven, 5800
Bulgaria
e-mail: venturi@abv.bg

On the right side there were three testicular veins that left the deep inguinal ring - lateral, middle and medial. Medial and middle right testicular veins after short route were fussed over the psoas major muscle. The lateral and combined middle and medial right testicular veins crossed ventrally over the psoas major muscle and ureter, and coursed cranially. The two veins were with an approximately equal diameter and length. The right lateral testicular vein were drained into the region of the right renal vein at a right angle. The combined medial and middle testicular veins were 6-8 cm longer than the normal right testicular vein and were drained at the angle between the right renal vein and the inferior vena cava at an acute angle (Fig.1, Fig. 2).

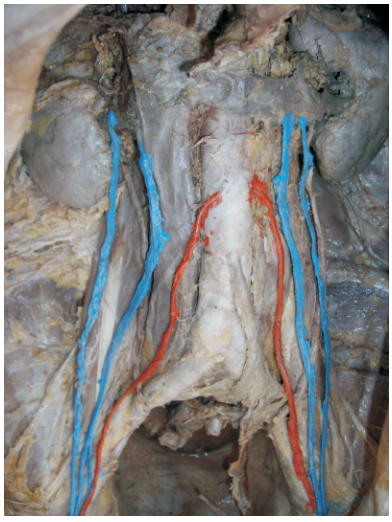

Fig. 1. On the right side three testicular veins: lateral, middle and medial are seen. Medial and middle right testicular veins are fussed after short course.

Fig. 2 .The combined medial and middle testicular veins were 6-8 cm longer than the normal right testicular vein and drained at the angle between the right renal vein at an acute angle.The right lateral testicular vein drained into the region of the right renal vein at a right angle.

The left testicular vein was duplicated and was composed of the medial and lateral venous trunks or the medial and lateral testicular veins. Both left testicular veins were of equal length and diameter. They left the deer inguinal ring, passed over the psoas major muscle, crossed the ureter, coursed cranially parallel to the left testicular artery and were drained into the region of the left renal vein at a right angle (Fig. 3, Fig. 4).

Fig. 3. The left testicular vein was duplicated and was composed of the medial and lateral venous trunks. Both left testicular veins are drained into the region of the left renal vein at a right angle.

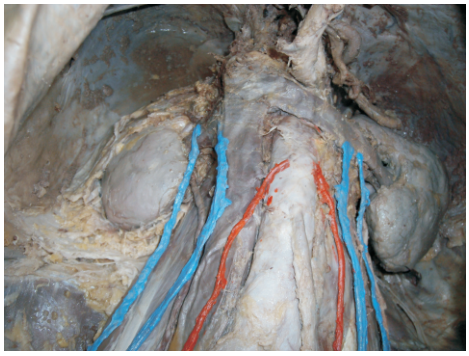

Fig.4. The left testicular veins are drained into the region of the left renal vein at a right angle.

Discussion

The testicular veins originate from the pampiniform plexus that is formed by the union of small veins from the testis and epididymis. The pampiniform plexus surrounds the testicular artery to proceed cranially and unites to form two or three venous trunks at the level of the deep inguinal ring. In the lumbar region, the venous trunks combine to form a single testicular vein that courses ventral to the ureter and accompanies the artery of the same name to ascend. The right testicular vein is shorter and usually drains into the inferior vena cava at an acute angle, and the left testicular vein is

longer (about 8-10 cm) and drains into the left renal vein at a right angle.

Congenital variations of the testicular vein include variety in the number, unusual course and atypical drainage of the testicular veins [3,6,7]. These morphological variations of the testicular veins are attributed to their embryologic origin [5]. The testicular veins are derived from the fetal subcardinal vein, which have a common origin with the renal veins and renal segment of the inferior vena cava [8]. The anastomosis between the subcardinal veins forms the left renal vein. When this communication has been established, the left subcardinal vein disappears, only its distal portion remains as the left gonadal vein. Therefore, the right subcardinal vein becomes the main drainage channel and develops into the renal segment of the inferior vena cava, right renal vein and right gonadal vein. Variations of the gonadal veins are caused by dysplasia of the subcardinal venous system in the seventh to eighth week of embryogenesis [5].

Variations in the gonadal veins are very significant during retroperitoneal surgical procedures. Variations of the testicular vein may result in persistence of the varicocele [1]. Variations in the number and unusual course of the testicular veins may increase the complexity of varicocelectomy or retroperitoneal vascular operations. Atypical drainage of the testicular veins may increase the risk of the renal transplantation and abdominal aortectomy. Multiple variations of the testicular veins would affect the approach to surgical procedures and lead to a higher percentage of operative failures in the retroperitoneal region [9].

In our case drainage of the right lateral testicular vein into right renal vein can contribute to the pathogenesis of the isolated right varicocele. Duplication, atypical drainage, termination angle and increased length may influence the blood pressure in these veins which is important factor in the pathogenesis of the varicocele.

Conclusion

Anatomical knowledge of the testicular venous variations and their special relations to adjacent vessels are of great importance for the medical practice- indispensable for urologists and vascular surgeons to recognize the causes of urinary and genital disorders and avoid complications of the retroperitoneal operations and radiological examinations.

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