Case Report

Variant course of left gonadal artery

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ABSTRACT

The variations of the arteries that develop from the mesonephric arteries, including renal, gonadal and suprarenal arteries are common. Variations in the anatomical relationship of the gonadal arteries to the renal vessels are frequently reported. We here present a case of an unusual origin and course of a left testicular artery arching over left renal vein. The arching of the left testicular artery over the left renal vein could be a possible cause of the left renal vein compression. Therefore, knowledge of the possible existence of arching gonadal vessels in relation to the renal vein could be of paramount importance to vascular surgeons and urologists during surgery in the retroperitoneal region. © IJAV. 2010; 3: 132–133.

Key words [testicular artery] [variations] [aberrant gonadal artery] [varicocele] [arched gonadal artery]

Introduction

The testicular arteries are paired vessels that usually arise from the abdominal aorta at the second lumbar vertebral level. Each artery passes obliquely downwards and posterior to the peritoneum. Descending on the posterior abdominal wall, each reaches the deep inguinal ring where it enters the spermatic cord [1]. However, they may also originate from the renal artery, middle suprarenal artery, and lumbar arteries. They may arise from a common stem, may be double, triple or quadruple [2].

Common variations encountered in relation to testicular vessels are as follows: level of origin, accessory or aberrant gonadal artery and unusual course of the artery like arching anterior to renal vein and retroperitoneal course [3]. The awareness of these variations is of particular interest in developmental biology and surgical anatomy. Moreover, such variations could result in compression of the vessels causing testicular and pelvic varicocele, hypertension, proteinuria and albuminuria [4].

Case Report

An abnormal course of the left testicular artery was uncovered during routine dissection of the posterior abdominal wall in a 55-year-old male cadaver allotted for first year undergraduates. The left testicular artery arose from the anterior part of the abdominal aorta at the level of origin of renal artery, posterior to renal vein on the same side. Then artery ascended upwards and arched over left renal vein and coursed downwards and laterally and supplied testis (Figures 1, 2).

Discussion

Variations in the origin, course and branches of the testicular artery are attributed to their embryonic origin. Accordingly, the embryo has three sets of lateral mesonephric arteries namely cranial, middle and caudal. Usually caudal persists and differentiates into the definite gonadal artery. However, cranial lateral mesonephric arteries persist and result in a high origin of the gonadal artery [5].

The gonadal arteries are formed by persistant branches of mesonephric arteries that develop cranial and caudal to the renal pedicle. If the kidney ascends much higher carrying its renal vein to a higher level than the origin of gonadal artery, they become type-III i.e., lower origin of the gonadal artery than the renal vein and arches around renal vein. The type-III is also called the arched testicular artery (of Luschka). The frequency of type-III has been reported as 6%. Since left kidney ascends higher with its renal vein than right side the variations incidence is more common on left side [6]. The present case reported is similar to the type-III, as testicular artery was caudal and posterior to the left renal vein and then arched around renal vein.

In a preliminary study conducted among Nigerians, the incidence of variant gonadal arteries reported as 52%. The main type of variant was type-III and was found
more among males compared to females [4]. In another study, it is concluded that the frequency of arched testicular artery was higher on the right side than the left among South African Negros (incidences are 22% and 2%, respectively) [7]. In a cadaveric study of the testicular artery in the South Indian population, variant testicular arteries are reported as 14.7%. Among three cases, high origin of the testicular artery as high as the renal artery origin and arching over the ipsilateral renal vein was reported [8].

Compression of the left renal vein between the aorta and superior mesenteric artery has been termed as nutcracker syndrome. Obstruction of left renal vein outflow results in venous hypertension [9]. From anatomical point of view the left renal vein compression, because of arched gonadal artery may be considered as cofactor for left renal vein hypertension [6]. Knowledge of possible existence of arching of gonadal vessels in relation to the renal vein could be of paramount importance to the vascular surgeons, urologists and radiologists during surgery and interventional procedures in the retroperitoneal region [10].

References