Anatomical Study of Copulatory Organ in Male Rabbit

Mohammad Ali Dadkhah and Hassan Gilanpour

ABSTRACT

The arterial vasculature of the penis was studied in a total of 10 apparently healthy adult male rabbit. In order to exhibit the arterial vascularization network by dissecting under a magnifier, latex colored with red ink was injected through the abdominal aorta artery and into crura penis were injected contrast material meglumine compound 60% and quickly radiography was obtained in lateral and ventral position. The main vessel of the penile blood supply in the rabbit was observed to be penile artery. It was determined to be a branch coming from the internal pudendal artery. The penile artery was divided into three branches before 4-5mm from the ischiatic arch. These were the deep artery of the penis, the dorsal penile artery and the most thin branch (entered and supplied the urethra). The other penile arteries arose from the arteria pudenda externa and divided into two branches. One of these branches extended to preputium and the other also divided into two further branches. The one branch supplied blood to the ischiocavernosus muscle, rectum and surrounding muscles and the remaining branch extended up to the root of the penis. Blood drainage from the penis is done by external pudendal vein and internal pudendal vein and venous blood in deep vein, bulbbar vein and dorsal penile vein enter to internal pudendal vein and then internal iliac and finally caudal venous cava and the external pudendal vein. Blood prepuce, skin, corpus spongiosum and ischiocavernosus, bulbospongiosus and retracter muscles and free part penis through dorsal vein drainage.

Key words: Copulatory, Penis, Rabbit.

Introduction

Rabbit penis of vascular or musculocavernos and formed from the three part, root, body and free part [2,3,8]. It many male species, the main vessel of blood supply of the penis is the penile artery. It arises from the internal pudendal artery [4,9]. The artery of the bulb (the penile artery) the profund artery of the penis and the dorsal artery of the penis [5,12]. The artery of the bulb, supplies the bulb and then runs distally within the organ to supply the corpus spongiosum about the urethra and later on approaching the apex of the penis [12,14]. The profund artery of the penis passes through the tunica albuginea at the root of the penis and ramifies in the corpus cavernosum [13,7]. Dorsal artery of the penis travels along the dorsal surface of the penis [14,11]. Blood drainage from the penis is done by external pudendal vein and internal pudendal vein [12,13,14]. The purpose of this paper was to observe the origin and distribution pattern of the penile artery and vein in the rabbit.

Materials and Methods

A total of 10 apparently healthy adult male rabbit, obtained from animal market, were used. The live body weight of rabbits were varied from 3000g-4000g. Animals were euthanized by the methods of Flecknell et al. [6]. Animals were bled by cutting the jugular vein. Latex colored with red ink was injected through the abdominal aorta artery. The animal cadavers were fixed in 10% formaldehyde solution for 24 h at room temperature. The main vessel of the penile were studied by gross and microscopic dissection, using streamicroscope and photographed by means of a digital camera. In one sample after anesthetized by rabbit between anus and penis gently cut and crura identified and the amount 5ml meglumine compound 60% into crura were injected, quickly radiograph was obtained in lateral and ventral position was observed with injection of contrast material in the crura, erection in the penis and drainage vessels in the penis was determined by X-ray and veins were identified.

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Results:

The main vessel of the penile blood supply in the rabbit was observed to be penile artery. This artery was determined to be a branch coming from the internal pudendal artery (Fig 1, 2). The penile artery was divided into three branches before 4-5 mm from the ischiatic arch (Fig 3). Among these branches, one division and the most thin branch entered and supplied blood to the urethra. The second, the deep artery of the penis, supplied blood to the corpus cavernosus penis. The third, the dorsal surface of the penis. (Fig 4). The deep artery of the penis was determined to enter the cavernosus body of the penis by passing through the ischiocavernosus muscle and penetrating to the tunica albuginea, and finally showing a spiral type shape. The dorsal artery of the penis was observed to pass caudally through the body of the penis in a groove formed by the right and left bulbocavernosus muscle after the leaving arteria pudenda interna, and later running along the dorsum penis, each side of the retractor penis muscle. The other penile arteries was observed to be extension of the external iliac artery. The pudendoepigastric artery arisen from the arteria pudenda externa and divided into two branches (Fig 5). The rami preaputialis as one of these branches extended up to preputium and the other also divided into two further branches. (Fig 6). The one branch supplied blood to the ischiocavernosus muscle, rectum and surrounding muscle layers and the remaining branch extended up to the root of the penis. (Fig 6). Blood drainage from the penis is done by external pudendal vein and internal pudendal vein and venous blood in deep vein penis, bulbar vein and dorsal penile vein enter to internal pudendal vein and then internal iliac and finally caudal vena cava, and the external pudendal vein blood prepuce, skin, corpus spongiosum penis and ischiocavernosus, bulbospongiosus and retractor muscles and free part penis through dorsal vein drainage (Fig 7, 8).

Discussion:

The penis of rabbit, as with other species of mammals, supply the penile artery. The origin of the penile arteries from pudenda interna to be branch of the internal iliac artery in male laboratory rodents varies according to species. According to the some literature reported that the artery of the penis divided into three branches, the artery of the bulb of the penis, the deep artery of the penis, and the dorsal artery of the penis. Ozgel et al. revealed that the penile artery divided into the deep artery of the penis at the level of the ischiatic arch [10]. In rabbit we showed that it was divided into three branches before 4-5 mm from the ischiatic arch, one division and the most thin branch entered and supplied the urethra, the second, the deep artery of the penis, which supplied corpus cavernosus penis, the third the dorsal penile artery travelled along the dorsal surface of the penis. The deep artery of the penis entered and supplied the corpus cavernous penis by penetrating the tunica albuginea and the present study determined the same finding. Tewari and parakash indicated an H-shaped anastomosis between the right and left dorsal arteries of the penis [11], however this was not the case in our study since we showed that the anastomosis was a web-shape appearance. Ozgel et al. reported that the dorsal artery of the penis passed caudally through the body of the penis in a groove formed by the right and left ischiocavernosus muscle, and lied on each side of the sub ischiocavernosus muscles [10].

Conclusion:

Arterial vascularization of the penis in the rabbit was demonstrated to be supplied by the penile artery which arisen from the internal pudendal artery which possessed two branches such as the deep artery of the penis, the dorsal artery of the penis, whereas the ramus preaputialis arisen from the external pudendal artery and blood drainage from the penis is done by external pudendal vein and internal pudendal vein and venous blood in deep vein, bulbar vein and dorsal vein enter to internal pudendal vein and then internal iliac and finally caudal vena cava and the external pudendal vein blood prepuce, skin, corpus spongiosum and muscles and free part penis through dorsal vein drainage.
Fig. 2:

Fig. 3:

Fig. 4:

Fig. 5:
Fig. 6:

Fig. 7:

Fig. 8:
References