Research Article

HISTOLOGICAL STUDY OF THE EFFECT OF UNILATERAL AND BILATERAL ORCHIECTOMY ON THE FUNCTION AND DEVELOPMENT OF MALE ACCESSORY SEX GLANDS IN BUCKS

Firas Jabbar Taresh* and Taher A. Fahed

Department of Surgery and Obstetrics, College of veterinary medicine, University of Basra, Basra, Iraq.

Abstract

The present study was aimed to investigate the effect of unilateral and bilateral castration on the function and development of accessory sex glands of local Iraqi bucks. Twelve adult bucks aged 18 - 24 months, weighing 20 - 23 kg were used. Animals were divided into three groups (4 in each). The first group was the control group (non castrated group), the second group was the unilateral castration group, the third group was the bilateral castration group. The accessory sex glands were collected from all groups to investigate the histological changes that occur in the accessory sex glands. The results of the present study showed that unilateral castration increases the glandular structures and dilated lumen in some glands, which mean more secretion of seminal fluid from these glands. While in bilateral castration group the results showed reduced in glandular structures which appeared as adipose tissue in some glands. The study concluded that the unilateral castration increased the activity and secretions of accessory sex glands, while bilateral castration decreased the activity and secretions of accessory sex glands.

Article History

Received: 05.05.2017
Revised: 30.05.2017
Accepted: 25.06.2017

Key words Orciectomy, Accessory sex glands, Histology and Bucks.

1. Introduction

Goats are socio–economically important in developing countries ensuring food and fiber supply and providing income to small households (Lebbie, 2004; Sahlu et al., 2004; Shalu and Goetsch, 2005). The goats are economic animals in Iraq, where reared for the production of milk, meat, skin and hair, but the goat farming in Iraq suffers from the problem of declining numbers, the total population of the animal in 1976 (about 2,989,000) became (about 1,408,000) in1986 (Sahlu et al., 2004) and about (1,512,000) in 1998 (Shalu and Goetsch, 2005).

Buck testes subjected to various affections which affect one or both testes. Some of these affections may be hereditary, such as Cryptorchidism (Arthur et al., 1982) or due to infections such as Orchitis (O’Conner and Dollar, 1985) and others may develop as a result of accidents such as trauma, testicular injuries, torsion and scrotal hernia (Cox, 1987). Other
testicular affection may occur due to unknown causes such as tumors, hydrocele, varicocele and malignant diseases (Pathak and Bhowmik, 1998). These affections interfere with the function of testis: especially spermatogenesis and hormonal secretion, and the treatment of these cases may required to remove the affected testis (unilateral castration) or in some cases both testes (Gacitua and Arav, 2005). In some cases, castration may be done for other purposes. Foster et al. (1993) found that unilateral castration increases the body weight, hair production and sexual behavior of rams. Many studies reported that unilateral castration has compensatory effect through measurement of testosterone hormone level and ejaculate volume in different animals (Ivany et al., 2002).

The accessory genital glands of males in bucks are located along the pelvic portion of the urethra, with their ducts which opening and emptying their secretion into the urethral passage. They included the Ampullae, vesicular glands, prostate gland and the bulbourethral glands. They contribute greatly to the fluid volume of semen, their secretions are the solution of buffers against the excess acidity of the female genital tract, nutrients and other substances needed to assure optimum motility and fertility of semen (Cunningham, 2002).

2. Materials and Methods

The study was conducted at the farm of Veterinary Medicine College of Basra University from January to May 2017. The animals in the study included 12 adult male goats, their ages ranged between 18 - 24 month, and their weights ranged between 20 - 23 kg. All animals were healthy and have good sexual characteristics, the animals were divided into three groups (4 in each). The first group was the control group (non-castrated group), the second group was the unilateral castration group, and the third group was the bilateral castration group.

Castration was done surgically under anesthesia of Xylaz in 2 % at dose 0.01 mg\kg B.W (ALFASAN, WOERDEN, HOLLAND). Local anesthesia by lidocaine 1 ml\1 cm area (Saravet Damascus, Syria). The scrotum was opened at the site of spermatic cord, spermatic cord was ligated by double rows of transfixation technique, then return the spermatic cord back to the scrotum, then closed the scrotum. Postoperative care included injection of penicillin (10000 IU/kg B.W) and streptomycin (25 mg/kg B.W) per day for 4 days. The accessory sex glands were collected from all groups (before and after castration) to investigate the changes of the effect of unilateral and bilateral castration.

3. Results

Seminal Vesicles Gland

For the Control group, the results showed a numerous number of glandular structures of S.V gland (Figure 1). For the Unilateral group, the results showed a heavy concentration of glands active only with the dilated lumen (Figure 2). For Bilateral group, the results showed a reduced number of glandular structures with dilated lumen filled with edematous fluid (Figure 3).

![Figure 1: Show S.V gland control group (non-castrated group). X 40 L: Lumen; G: Gland](image1)

![Figure 2: Show S.V gland Unilateral group. X 40 L: Lumen; G: Gland](image2)
Ampullae Gland

For the Control group, results showed dilated glandular lumen (Figure - 4). For the unilateral group, the results showed active glandular structures with dilated lumen, plus foamy appearance of epithelial lining (Figure - 5). For Bilateral group, the results showed reduced glandular structures with small lumen (Figure - 6).

Bulbourethral Gland

For the Control group, the results showed compact glandular structures only with small lumen (Figure - 7). For the Unilateral group, the results showed active glandular structures with several lumen appearances, Plus active epithelial lining (Figure - 8). For Bilateral group, the results showed reduced activity of glandular structures with dilated lumen, And showed clear dilated lumen present (Figure - 9).
Prostate Gland

For the Control group, the results showed as alveoli or dilated acini (Figure - 10). For the Unilateral group, the results showed active glandular structures appeared as alveoli with dilated lumem (Figure - 11). For bilateral group, the results showed any glandular tissue or alveoli appeared as adipose tissue (Figure - 12).

4. Discussion

For the unilateral castration group in all glands, the results showed more connective tissue and enlargement in glands in comparison to non-castrated bucks. Such finding represents the histological difference between the castrated and non-castrated bucks which agree with the researches of Emam et al. (2016) on bucks and Olamide et al. (2007) in their study on rats. In Bilateral castration group the results showed less in a glandular structure which confirmed with Olamide et al. (2007) study on rats, Raeside et al. (1997) study on pigs, Frandson and Spurgeon (1992) and English et al. (1987) on rats were said that castration induces apoptosis in all glands epithelium and the number of glandular cells of the ampullae gland, prostate gland, seminal vesicles gland and bulbourethral gland was significantly reduced. The researchers Huttunen et al. (1981) in their study on rats found prostatic atrophy in castrated animals.

5. References

4) Emam, M. A., El - Zoghby, E and Abughrien, B. (2016). Histological study on the vesicular glands of castrated and


How to Cite this Article:


DOI: 10.22192/lsa.2017.3.4.1