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Evaluation on the Histopathology of Testes Anomalies in the Bulls Slaughtered at the City of Van

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Abstract

Testis is very important in determining the bulls to be used in semen production at an early age. The aim of this study was to determine the incidence of testicular anomalies and pathological cases in bulls slaughtered in Van, and present the histopathologically. For this purpose, 1133 bulls were examined in different breeds (DAK: East Anatolian Red, Swiss Brown, GAK: South Anatolian Red, Holstein, Cross breed, Simental, Indigenous Black). For pathological examination, the testis was fixed in Bouin's solution. Different testicular pathologies were detected in 46 (4.06%) of 1133 bulls. Testicular anomaly and pathology rate in all races were Holstein 6.53%, Simental 5.55%, DAK 2.35%, GAK 1.88% and Swiss Brown 1.90%. According to these, Holstein and Simental breeds are more prone to testicular anomalies and pathologies than other breeds. As a result; In this study, pathologies of the bulls slaughtered in Van province were examined and distributions of testicular anomalies encountered in bulls in this region are presented.

Key Words: Anomaly, bull, incidence, testis

Van'da Kesilen Boğalarda Testis Anomalilerinin Histopatolojisinin Değerlendirilmesi

Öz

Sperma üretiminde kullanılacak boğaların erken yaşta belirlenmesinde testisler çok önemlidir. Bu çalışmada, Van'da kesilen boğalarda testiküler anomalilerin ve patolojik vakaların insidansının belirlenmesi ve histopatolojik olarak sunulması amaçlanmıştır. Bu amaçla farklı ırklarda (DAK: Doğu Anadolu Kırmızı, İsviçre Kahvesi, GAK: Güney Anadolu Kırmızı, Holstein, Çapraz cins, Simental, Yerli Siyah) 1133 boğa testisi incelenmiştir. Patolojik muayene için testisler Bouin solüsyonunda tespit edilmiştir. 1133 boğanın 46'sında (%4.06) farklı testiküler patolojiler belirlenmiştir. Tüm ırklarda testis anomalisi ve patoloji oranı; Holstein %6.53, Simental %5.55, DAK %2.35, GAK %1.88 ve İsviçre Esmerinde % 1.90 olduğu saptanmıştır. Bu verilere göre, Holstein ve Simental ırkları diğer ırklara göre testis anomalileri ve patolojilerine daha eğilimlidir. Sonuç olarak; bu çalışmada, Van'da kesilen boğaların testislerindeki patolojileri incelenmiş ve bu bölgedeki boğalarda karşılaşılan testis anomalilerinin dağılımları ortaya konmuştur.

Anahtar Kelimeler: Anomali, boğa, insidans, testis

INTRODUCTION

The testes are very important in the production of semen or in the early detection of high yielding bulls to be used as breeders. Because it is clear that there is a very close relationship between semen quality and testicle (1, 2, 3).

Among the factors that influence testes development are animal breed (4, 5). It has been reported that not only each breed has its own unique characteristics but also body weight, testicle size, semen production and reproductive performances are changed as breed characteristics (6, 7).

The fertility of farm animals depends on the reproductive performance of the animals but reproductive diseases cause undesirable serious consequences in the productivity of livestock. One such disease is cryptorchidism (8). Immediately after birth, the testes descend into the scrotum and settle. Congenital deficiency of cryptorchidism in one or both of the testes into the scrotum is called cryptorchidism (9). The disease is inherited and can usually occur at birth or shortly after birth (8). Although unilateral cryptorchidism is more common, it can be bilaterally shaped on the unilateral side (8, 9). Cryptorchidism cases were reported most often in stallions less frequently in coats and coats and rarely in bulls (10, 11). The lack of testicular development is called testicular agenesis. If there are only one testes, it is called monorchisim, if there are two testes it is called anorchisim. In animals, testicular agenesis is rare. Cryptorchidic testes are often small, soft, and deformed. These testes may be located in the inguinal canal or in the absence of the abdomen. Since hereditary factors play a role in the formation of cryptorchidism, it is suggested that such animals should not be used as whole casting or breeding (8, 9).

Testicular hypoplasia usually occurs as a congenital condition in male animals that have reached sexual maturity, causing the left testicle to appear smaller than the right test (12). Testicular hypoplasia, defined as the ina-

dequacy of testes development, is a phenomenon that occurs prenatally or postnatally, but always in the prepubertal period, with or without other genital organs. Testicular hypoplasia is usually associated with scrotal testes. But in cryptorchid and intersex cases testicles are hypoplasic. Testicular hypoplasia is most common in bulls, and less commonly in rams, stallions and dogs. The etiopathological factors of testicular hypoplasia are not known precisely. However, such as the disruption of the scrotum in the testicle, development of the genital organs and hormone deficiency is related to GnRH, FSH and testosterone from hormones that stimulate testosterone release, fat accumulation in the scrotum, thermoregulation disorder in the inguinal hernia zinc deficiency, and the hereditary factor in unilateral cases (9, 10). Although the cause of hereditary factors is not known precisely, it may be due to genetic, environmental or genetic-environmental interactions in various stages of embryogenesis or fetal development (13). The orchitis, commonly referred to as the testicular inflammation, is often referred to as orchiepididymitis, as it is often complicated by the inflammation of the epididymis. Mostly unilaterally developing orchitis can develop bilaterally with the effect of the other test of the inflammation. Orchitis; direct trauma, perforation of the scrotum, infected urine and prostate secretion occurs by duct depletion or systemic infections hematogenously reaching the testes (14).

Hematocele (scrotal hematoma) occurs with blood accumulation in the tunica vaginalis testes due to local haemorrhage and tearing of the tunica albuginean, which is the result of direct blunt trauma or perforation injury of the testes. In mildly traumas, hydrocele is formed as a serous fluid accumulation within the tunica vaginalis testes, without any traumatic lesions or localized indications (12, 14, 15, 16,).

In the present study, it is aimed to investigate the incidence and pathologic findings of the lesions in testes and epididymis of various breed bulls cut in the slaughterhouse in the Van region and to draw attention to the disorders that may cause low fertility.

MATERIALS AND METHODS

Animals

This study was conducted on 1133 bulls, ages 2-3, randomly selected from the animals brought to Van Slaughterhouse for slaughter. The breeds and numbers of bulls studied in the survey are given in Table 1.

Table 1. Breeds and numbers of bulls studied

Bulls breed	Slaughtured Bull Number
Eastern Anatolian Red (DAK)	212
Swiss Brown	105
Southeastern Anatolia Red (GAK)	53
Holstein	475
Cross breed	120
Simmental	18
Indigenous Black	150
TOTAL	1133

Method

Genital organ examinations were performed in detail along with general health examinations as an antemortem of slaughter animals. Immediately after slaughter, localizations of the testicles on the carcasses were determined. Later on, the testes of the bulls were separated from their carcasses and the pathomorphological changes were recorded by examining the consistencies and dimensions as postmortem. In addition, the diameter of the tubules was measured by an ocular micrometer.

Histopathological examination

Pathological evaluation of testes that are not normal at Yuzuncu Yil University Veterinary Faculty was made in Departments of Pathology. For histopathological examination, testes were fixed in Bouin solution for 72 hours. Within the routine follow-up process; tissue samples were passed through alcohol series to dehydrate; xylole series to provide transparency and then paraffin blocked. From these blocks, all of the serial sections taken at 5 microns in thickness in the microtome (Leica RM 2135) were stained according to Hematoxylin-Eosin (H.E.) staining technique. Inspection and imaging were done on a research microscope (Nikon 80i-DS-RI2).

The work is carried out on the slaughterhouse material, the Ethics Committee Permission is not required.

RESULTS

The number of animals used in the research was 1133, and 46 of them had different testicular pathologies. When the total number of animals used in the study (1133), the pathology rate is 4.06% (Table 2).

Pathologic results

Macroscopic findings

In the macroscopic examination, none of the 5 cases mentioned in table 2 were found to have bilateral cryptorchidism. In these cryptorchid cases, two of which were unilateral, the right one and the other three left, the testes were intraabdominally localized in the caudal of the kidneys longitudinally or horizontally with a germinal sacral complex and a thin funiculus spermaticus. When the examination was carried out, it was seen that the inguinal channels were also open. The testes surface was reddish-purple due to a marked hyperaemia in the superficial vessels of the cryptorchid testes. In addition, macroscopically similar cryptorchid testes were smaller in structure and had a soft consistency than the normal testes. The epididymis of the cryptorchid testes was smaller than the epididymis of normal testes. Compared in term of size, the size of hypoplasic testes were found from close to the size of a healthy testicle to half of healthy testicle size. Hypoplasic testes whose sizes are close to normal closed to normal in terms of consistency, but their color is whitish matte color (Figure 2). Whereas the consistency of the small ones was harder than the others. No gross lesions were found on the theirs cutting surface. According to localization, four of the 14 cases of orchitis were bilateral, 7 were right, 3 were left, and 10

were unilateral. One of them had also epididymitis. The inflamed epididymis associated with orchitis were swollen, enlarged and more hard due to developing fibrosis. In addition, its cutting surface were yellowish and with coherent abscess.

Table 2. Bull breeds, ages and distribution of testicular pathologies

	Race	Age	Pathology	Number	%
1	Swiss Brown	3	Anorchidi (Unilateral)	1	0.088
	Holstein	2	Anorchidi / Cryptorchism	1	0.088
3	Holstein	2	Epididymitis (Unilateral)	1	0.088
4	Holstein	3	Hematocoel (Unilateral)		
5	Holstein	3	Hematocoel (Unilateral)	3	0.26
6	Holstein	3	Hematocoel (Unilateral)		
7	Swiss Brown	3	Hypoplasia (Bilateral)		
8	Holstein	3	Hypoplasia (Bilateral)	4	0.35
9	Holstein	2	Hypoplasia (Bilateral)		
10	Holstein	3	Hypoplasia (Bilateral)		
11	DAK	3	Hypoplasia (Unilateral)		
12	DAK	3	Hypoplasia (Unilateral)		
13	Holstein	2	Hypoplasia (Unilateral)		
14	Holstein	3	Hypoplasia (Unilateral)		
15	Holstein	3	Hypoplasia (Unilateral)	15	1.32
16	Holstein	3	Hypoplasia (Unilateral)		
17	Holstein	2	Hypoplasia (Unilateral)		
18	Holstein	2	Hypoplasia (Unilateral)		
19	Holstein	2	Hypoplasia (Unilateral)		
20	Holstein	2	Hypoplasia (Unilateral)		
21	Holstein	2	Hypoplasia (Unilateral)		
22	Holstein	3	Hypoplasia (Unilateral)		
23	Holstein	2	Hypoplasia (Unilateral)		
24	Cross breed	2	Hypoplasia (Unilateral)		
25	Simmental	2	Hypoplasia (Unilateral)		
26	Indigenous Black	3	Hypoplasia / Epididymitis	1	0.088
27	Indigenous Black	3	Hypoplasia / Cryptorchism	1	0.088
28	DAK	2	Cryptorchism (Unilateral)		
29	GAK	3	Cryptorchism (Unilateral)	5	0.44
30	Holstein	3	Cryptorchism (Unilateral)		
31	Holstein	3	Cryptorchism (Unilateral)		
32	Indigenous Black	3	Cryptorchism (Unilateral)		
33	Holstein	2	Orchitis / Epididymitis	1	0.088
34	DAK	2	Orchitis (Bilateral)		
35	Holstein	3	Orchitis (Bilateral)	4	0.35
36	Holstein	2	Orchitis (Bilateral)		
37	Indigenous Black	3	Orchitis (Bilateral)		
38	DAK	2	Orchitis (Unilateral)		
39	Holstein	3	Orchitis (Unilateral)		
40	Holstein	3	Orchitis (Unilateral)	9	0.79
41	Holstein	2	Orchitis (Unilateral)		
42	Holstein	2	Orchitis (Unilateral)		
43	Holstein	2	Orchitis (Unilateral)		
44	Holstein	2	Orchitis (Unilateral)		
45	Holstein	3	Orchitis (Unilateral)		
46	Indigenous Black	2	Orchitis (Unilateral)		

Table 3. Bull breeds, number and testicular pathology of bulls.

Bull Breeds	Number of Slaughtered Bulls	Pathological Disorder Number of Specified Animals	%
Eastern Anatolian Red (DAK)	212	5	2.35
Swiss Brown	105	2	1.90
Southeastern Anatolia Red (GAK)	53	1	1.88
Holstein	475	31	6.53
Cross breed	120	1	0.83
Simmental	18	1	5.55
Indigenous Black	150	5	3.33
TOTAL	1133	46	4.06

Microscopic findings

In the microscopic examination, the tubules of the cryptorchid testes were very small in diameter and there were sertoli cells in the germinative epithelium with vacuoles of different sizes. There was a moderate degree of thickening in the basal membranes of some tubuli. In macroscopically firm testicles were observed proliferation of interstitial connective tissue Leydig and germ cell necrosis, decrease in Leydig and germ cell numbers, inadequacy of spermatocyte development, degeneration of sertoli cells, ondulation of basal membrane and morphological deterioration of tubuli It was also noted that there were tubuli with atrophy in the interstitium. In the epididymis of some of the cryptorchid testes were the wall of the ductus epididymis thickened, the number of vessels in the interstitium increased, with pink homogeneous fluid in the lumens of ducts and interstitium.

Findings in hypoplasia cases were generally similar to those in cryptorchidism, but findings in some cases were less severe. In slight grade hypoplasia of the testes occurred partly narrowing of the diameter of the tubular. Their germinal layers were composed of two or three rows of germ cell layers. Therefore, spermatogenesis usually had stopped at the spermatid stage. Some tubules suffered from hypoplasia took place individual vacuoles. In severe cases suffered from hypoplasia, there were narrowing at varying rates in the tubulus diameters of hypoplastic testes. It was determined that spermatogenesis stopped due to a single-order formation in the layers of the germinative epithelium, and thus there weren't any sperm in the tubulus lumens. There were seen small vacuoles, degeneration and necrosis with picnotic nuclei in the many germinative layers of tubuli. Morphologically, it was also seen different shapes and sizes tubuli with thickened basal membranes and hyaline. In severe hypoplasia, there were an increase in peritubular connective tissue and necrotic cells in the interstitium. There was a partial reduction in sertoli cell counts in slight cases, but it was a significant decrease in severe cases.

In the microscopic examination of orchitis testes, especially in chronic cases, the majority of the tubules were composed of single ordered epithelium or only sertoli cells. There were usually no germinative epithelium layer in these tubules with thickened basal membranes or they composed necrotic germinative cells. Therefore, there weren't any spermatogenetic activities. The tubuli which was morphologically different in shapes and sizes, had narrowed lumen. The interstitial area was found to be luminescent cells of the dark eosinophilic lymphoplasmositer, which were not found in the Leydig cells, but were determined having pyknotic or karyorrhectic nuclei.

In the case of orchitis accompanying with epididymitis; there was marked hyperplasia in the epithelium of the ductus epididymis, fibrosis in the interstitium with numerous blood vessels and numerous vacuoles in the germinative layer. Tubular measurements of abnormal testes are given in table 4. Microscpic apparences showed in Figure 3 (a-ı).

Table 4. Tubuli measurements of abnormal testes.

	Pathology	Tubulus Width	Tubulus Length	Tubulus Thick
1	Cryptorchism	8,22	13,51	2,88
2	Cryptorchism	4,18	5,70	2,51
3	Cryptorchism	5,70	8,37	3,21
4	Cryptorchism	7,58	7,91	2,86
5	Cryptorchism	4,16	18,51	4,04
6	Cryptorchism	5,15	15,12	10,23
1	Hypoplasia	11,40	10,00	4,18
2	Hypoplasia	36,00	48,00	10,40
3	Hypoplasia	28,60	56,00	10,50
4	Hypoplasia	32,00	55,00	9,80
5	Hypoplasia	38,00	53,00	11,60
6	Hypoplasia	36,00	52,00	7,60
7	Hypoplasia	33,09	47,64	4,77
8	Hypoplasia	48,27	82,04	2,61
9	Hypoplasia	71,27	66,86	10,84
10	Hypoplasia	83,00	137,00	14,40
11	Hypoplasia	62,00	44,00	13,00
12	Hypoplasia	43,82	48,39	4,47
13	Hypoplasia	73,00	36,00	14,00
14	Hypoplasia	34,75	4,18	4,18
15	Hypoplasia	70,00	51,00	15,00
16	Hypoplasia	30,82	27,48	7,07
17	Hypoplasia	68,00	37,00	10,65
18	Hypoplasia	23,08	5,70	12,32
19	Hypoplasia	81,00	49,00	11,40
20	Hypoplasia	21,33	4,18	1,67
21	Hypoplasia	89,00	62,00	16,75
22	Hypoplasia	18,84	8,37	5,38
23	Hypoplasia	92,00	72,00	18,80
24	Hypoplasia	16,43	14,40	6,76
25	Hypoplasia	20,43	6,52	6,99
1	Orchitis	109,00	74,00	25,60
2	Orchitis	110,00	80,20	17,00
3	Orchitis	111,00	74,00	18,60
4	Orchitis	111,00	68,00	16,40
5	Orchitis	115,00	94,00	23,00
6	Orchitis	115,00	89,00	27,00
7	Orchitis	119,00	88,00	28,00
8	Orchitis	135,00	114,00	29,00
9	Orchitis	198,00	156,00	24,00
10	Orchitis	236,00	166,00	20,60
11	Orchitis	137,00	83,00	14,40
12	Orchitis	104,00	93,00	25,00
13	Orchitis	108,60	74,20	17,00
14	Orchitis	156,00	198,00	24,00
15	Orchitis	166,00	236,00	20,60

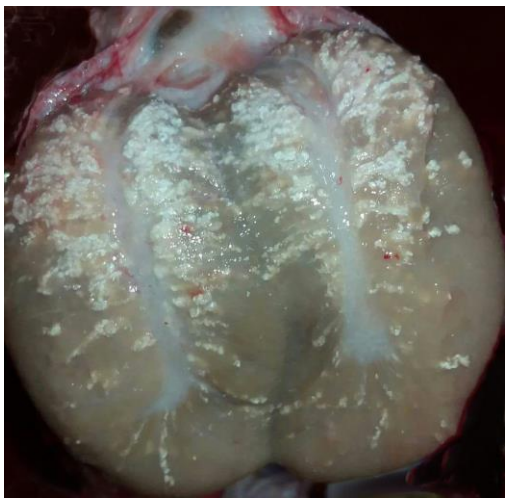

Figure 1. Necrotic orchitis

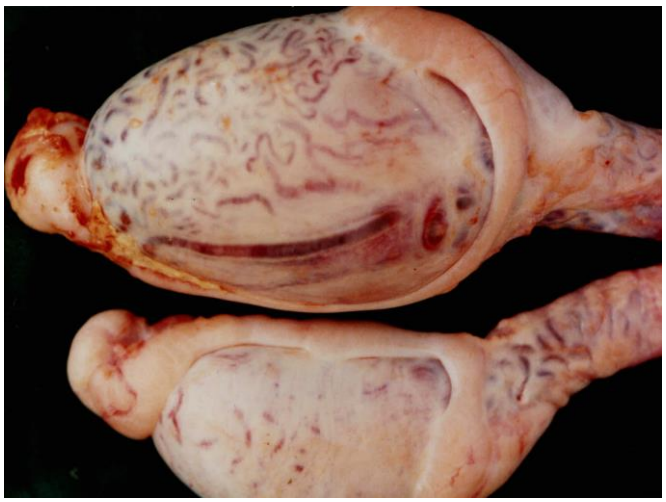

Figure 2. Unilateral hipoplazik testis

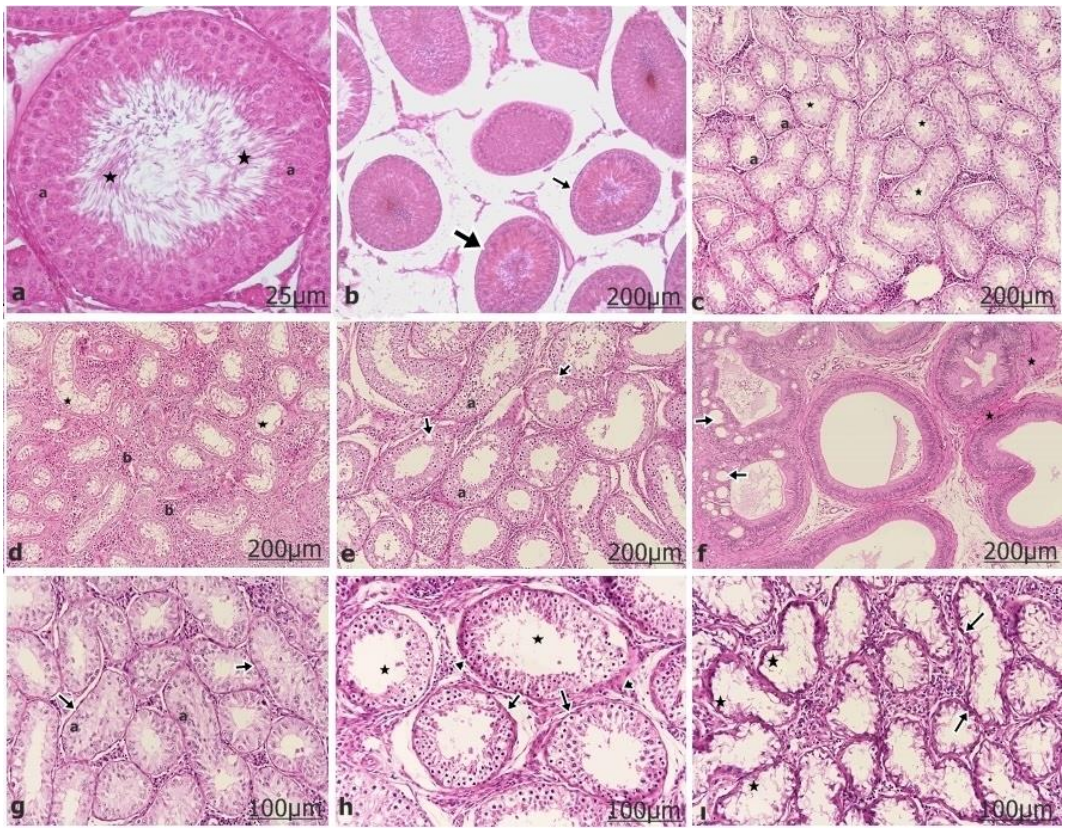

Figure 3. Microscopic apparence

a. The appearance of normal tubuli composed of 4-6 sequential germ cells (a) and the presence of spermatogenesis (star). (40X) (H.E.).

b. Atrophied tubuli (arrows). (10X) (H.E.)

c. Degenerative tubuli that consisting of 1-2 sequential germ cells (a), spermatogenesis is stopped (star) and the narrowing of the intertubular space in general. (10X) (H.E.).

d. Severe orchitis is a necrotic Leydig cell that has hyperplasia in the interstitium with degenerated tubuli (star), which is formed in atrophic-degenerated tubules, peritubular fibromuscular hypertrophy, lumen spermatids, lupus, almost all germ cells including Sertoli cells. (10X) (H.E.).

e. Moderate hypoplastic testis 2-3 sequential germ (star), partially degenerated tubuli composed of cells and occasionally containing vacuole (arrows). (10X) (H.E.).

f. Fibromuscular hypertrophy (star) in interstitium, ductal hyperplasia and epididymis with intraepithelial vacuolation (arrows). (10X) (H.E.)

g. Fetal Sertoli cells and cryptorchid tubules composed of partially single germ cells, spermatogenesis stopped (star), basal membrane thickened (arrows), decreased intertubular space, and locally pycnotic nucleated Leydig cells. (20X) (H.E.)

h. The basal membrane is thickened (arrows) and degenerated tubuli (a) containing pycnotic Sertoli and germ cells. (20X) (H.E.)

ı. Chronic orchitis, which only has hyalinized basal membrane (arrows), almost all of the germ cells, including Sertoli cells, have lost spermatogenesis, and are disrupted in the tubuli morphology (arrows). (20X) (H.E.)

DISCUSSION

In order for animal breeding to be economically feasible, it is necessary to keep calf every year by continuing without fertility. This can only be achieved in dairy farms that do not have fertility problems. It should not be forgotten that it is not enough to connect the females to the causes of the fertilization but also the role of the male animals. Sterility and infertility in male animals affect both fertility and milk and meat production (17). Infertility and sterility can be caused by factors such as temperature, trauma, radiation, malnutrition, chemical compounds, herbal toxins and blockage of spermatozoon flow, as well as developmental disturbances of testes and epididymis, circulatory disorders, degenerative changes, inflammatory reactions and neoplastic processes (18, 19, 20).

The testes need to be at a temperature of 3-4 °C lower than body temperature in order to function normally. Too hot or too cold of the ambient temperature affects the testicular function to a large extent negatively, leading to degeneration of the testicle and reducing fertility. In addition, in the arid seasons of tropical regions, high environmental heat and a significant decrease in the quantity and quality of the foods that animals can negatively affect testicular development (21, 22). Migbaru et al (23) study on 384 bulls in Ethiopia, slaughtered in the slaughterhouse; orchitis 4.4%, epididymitis 3.4%, testes hypoplasia 3.6% and cryptorchidis 3.1%. In this study conducted in Van province, testes hypoplasia 1.85%, orchitis 1.23%, cryptorchidism 0.52%, epididymitis 0.26%, indicating that temperature and environmental factors are important for the development of testes.

Testes hypoplasia fetal and postnatal tubulus disorder that characterized by complete inability to develop seminiferous (24), always present in the prepubertal period, with or without other organs (11). This is most common in bulls, fewer rams, and rarely in horses and dogs (18). Testicular hypoplasia is bilateral or unilateral and results in abnormal sperm rates due to the degree of hypoplasia, resulting in sterility resulting from low fertility (21). In this study hypoplasic testes were more commonly seen unilaterally. These hypoplasic testes were found to be harder in structure and smaller in size than the normal test. This situation is in line with what Türkütanit (18) reported. In such cases, microscopic findings such as hypoplasia of seminiferous tubules, occasional increase in connective tissue cells in the interstitium, vacuolization of spermatogenesis and vacuolization of cytoplasm of epithelial cells, basement membrane thickening, hyalinization, increase of intertubuler region and interstitial Leydig cell hyperplasia were found (18, 25). Testicular hypoplasia, which was 1.85% in our study due to testicular anomalies and pathologic disorders, ranked first and fit the researchers' work.

Cryptorchism, which is a disorder of the testes with scrotal ingestion, can be found in all domestic animals at varying rates. Cryptorchia has been reported less frequently in rams and coats and rarely in bulls in the most affected stallions. Although the cause of cryptorchidism is not well known, it is noted that the formation of gubernaculum or hormonal disturbances controlling enlargement and withdrawal of gubernaculum, constriction of large or inguinal canal, shortening of spermatic cord and vascular anomalies may play a role, but the most important cause is inherited (11). In this study, cryptorchidism was determined as 0.52%. Amann and Veeramachaneni (2) found that fewer than 0.5% cryptorchidism, which is a hereditary disturbance in several generations of relatives. Ayodeji and Suwaiba (8), however, reported that their work in the bull was 1.74%. Ayodeji and Suwaiba (8) are two factors that cause the rise of cryptorchidism. The first is that in Nigeria the swarms graze together for several generations in nomadic form and will have an inherited effect on the consequence of their relatives and the second is that they are exposed to environmental agents such as estrogenic plants that affect the fetal development of pregnant cows due to the shortage of grazing areas in Nigeria. This work is done; Cryptorchidism is not parallel to (8) while it is parallel to (8) in terms of the influence of hereditary factors. Ayodeji and Suwaiba (8) it can be shown that if our country is grazed with male and female cows in separate droplets, our country will not be arid due to climate, and that it has sufficient wealth in terms of grazing areas. Despite the fact that the cases of cryptorchidism were reported unilaterally or bilaterally (11, 18), all of the studies were performed in a unilateral manner with a small and soft consistency in the caudal region of the kidneys intraabdominally. Proliferation of interstitial connective tissue, Leydig and germ cell necrosis, reduction of Leydig and germ cell numbers, inadequacy of spermatocyte development, deterioration of the Sertoli cells, deterioration of the morphological structure of the tubules and atrophy in the tubules is a general microscopic finding of cryptorchid testes and is similar to the studies done in this context (11, 18).

Orchitis is defined as testicular inflammation caused by agents such as traumatic, bacterial, viral and fungal infections of the testes (10). Infection agents reach the testes directly by hematogenous pathway or by traumatic lesions (26). The orchitis caused by Brucella spp.'in bacterial orchitis is characteristically necrotic, but there is no specific finding in other infections (10). Although orchitis can be seen in all farm animals, it is even more important in bulls, rams and bucks. In rams, genital organ lesions are reported to be present in fairly low rates in orchitis (27, 28). It has been reported in different proportions in the bulls such as 2% (29), 1% (30) and 0.17% (31). In this study, it was determined as 0.86%. It has been reported that short-term extraction of breeding animals causes economic losses in considerable quantities due to infertility or sterilization of female animals and excessive treatment costs due to over-transmission of the disease to females (32). Fourteen cases of orchitis were bilateral and ten of orchitis were unilateral, 1 with epididymitis. Macroscopically; testicular growth, adhesion between tunica vaginalis and testes and epididymis tissues, mediastinum testes, small grayish-yellowish hard lesions, microscopically; tubuli seminiferous have common or focal necrosis centers, mononuclear cells and giant cells in their surroundings, and some tubular lumens are filled with neutrophil leukocyte and desquame tubulous epithelial cells. In interstitium, depletion of tubu-

lar cells with lympho-plasma cell infiltration is seen. An acute inflammatory table involving edema, loose connective tissue, and neutrophil leukocyte infiltration with intense fibrosis in chronic cases is similar to those of the above investigators.

In this study, holstein (6.53%) and simental (5.55%) were found to be the first in terms of susceptibility to testicular anomaly and pathology whereas domestic breeds such as DAK (2.35%), GAK (1.88%) and Swiss Brown in the last order. According to these rates, Holstein and Simental breeds are more susceptible to testicular anomalies and pathologies than other breeds.

As a result; The incidence of anomalies and pathologic cases in the testes was determined to be 4.06% in this study conducted on 1133 bulls of various races (DAK, Swiss Brown, GAK, Holstein, Cross breed, Simmental, Indigenous Cow) slaughtred in Van Province. It should be taken into consideration that testicular anomalies that constitute the reproductive part of the urogenital system in pets and that the inflammatory pathological disorders such as orchitis / epididymitis cause serious fertility problems and severe economic losses due to hypo-spermatogenesis or aspermatogenesis, such bulls may be infertile or sterile and caution should be exercised in breeding selection

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