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Case Report : Testicular Swelling in Buck.

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Abstract

Testicular swelling in animal must be treated as serious dangerous condition , it may be resulted from many causes conditions such as Bacterial , Viral , Fungal infection and testicular neoplasia may also follow this case history was buck show sign of unilateral testicular enlargement , the general condition was good , the sexual desire was not be appeared because the buck was out of the reproductive season . Ultrasonography examination was performed to detect any form of tissue formation and assessed the testicular tissue. Histopathological assessment had been done by taking a biopsy from the infected testis using a biopsy gun according to the results of ultrasonographic examination, and histopathological test of the testicular tissue showed chronic inflammation (orchitis) with granulation tissue formation. The surgical treatment represents the best choice to deal with such a case, so that orchidectomy of infected testes has been done.

Keywords: Testicular swelling, Testicular Tumors , Ultrasonography.

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Introduction

Testicular swelling in bucks has many causes; two of the most common are inflammation and infection. Orchitis, peri-orchitis and epididymitis- aetiology: orchitis, peri-orchitis and epididymitis are commonly of infectious origin and by organisms such as Brucella spp. These symptoms can lead to serious fertility issues in affected animals. Neoplastic and non-neoplastic conditions should be differentiated in hyper-vascularised testicular enlargement. Painful swelling of the testis is a significant symptom of testicular cancers, with at least one study reporting a lump or swelling as the most significant risk (1). The orchitis may mimic a neoplasia, otherwise being without surgical indication (2). Also, testicular inflammation (which may be viral or bacterial) is followed by enlargement. In one series, orchitis was identified in 40% of non-neoplastic cases (3). Further testis enlargement may result from epididymo-orchitis (inflammation of the testis as well as the epididymis), which was present in 12%(3). It can be the acute form of orchitis, with symptoms, also the chronic, which can occur latent and can result in infertility and testicular atrophy, reinforcing its status as the most common etiology of testicular inflammation (4). The identification of neoplastic etiologies is essential to avoid life-threatening complications, although non-neoplastic conditions are known to cause significant testicular enlargement and should be treated accordingly. The enlargement of the testis in bucks may occur due to a variety of pathological conditions, most commonly inflammation and structural abnormalities. The most frequent causes are orchitis, epididymitis and peri-orchitis, usually due to brucellosis infection (5). Furthermore, structural changes may be induced due to surgical interventions, e.g. vasectomy, yielding in seminal granulomata and orchitis, respectively (6). Infection is one of the leading causes of testicular enlargement, though other conditions like immunization and surgical procedures like vasectomy may also be associated with pronounced alteration in the structure and function of the testis. The interventions can inhibit testosterone synthesis and also change the US appearance of the testis and can complicate the diagnosis and follow-up of testicular swellings (7).

Causes of Testicular Swelling

Orchitis and Epididymitis

In bucks, inflammation of the testicles (orchitis) may be associated with a number of infectious diseases, including bacteria. The disease can cause severe clinical symptoms, including oedema of the scrotum, pain, and systemic symptoms such as fever. The identification of causes and treatment is necessary for proper management. These are the most common causes of scrotal enlargement in bucks, and orchitis is the most common type of all. Inflammation may be attributed to infections, predominantly with Brucella melitensis and Brucella ovis, which were detected in 21.3% and 48.8% of cases, respectively (8). Buck epididymitis is a major reproductive problem in bucks and is usually associated with bacteria and/or a traumatic insult, as occurs in vasectomy. It may result in severe complications such as orchitis and anatomical changes in the genitalia. The causes and consequences of epididymitis in bucks are important to know for management and

therapy decisions. Common causative agents include Histophilus. Ovis and Pasteurella multocida that have been reported in rams and calves, respectively (9). Bucks can display scrotal swelling, epididymal hardness, and a change in shape and size of the scrotum (10). In comparison, although bacterial infection is a predominant factor, other issues such as environmental stress conditions and genetic backgrounds may also be involved in the pathogenesis of epididymitis in bucks, and thus, there is a need for further studies on multifactorial determinants of reproductive health. Post vasectomy, bucks can present orchitis and epididymal changes, with epididymal tails increased in size and consistency, and the presence of anechogenic cavities (10).

Testicular tumors

Testicular tumors in bucks, while not extensively documented, can be understood by reviewing testicular tumors in other species, such as canines and humans. Testicular tumors are generally classified into germ cell tumors and sex cord-stromal tumors, with germ cell tumors being more prevalent. In canines, common testicular tumors include Sertoli cell tumors, Leydig cell tumors, and seminomas, which are often benign but can present diagnostic challenges due to atypical morphological patterns. The World Health Organization's classification of testicular tumors emphasizes the importance of morphological and molecular characteristics in diagnosis, which can be applied to understanding similar tumors in bucks (11). The most common type of testicular tumors in humans, accounting for 98% of cases, and include seminomas and non-seminomatous germ cell tumors (11). Testicular tumors, particularly germ cell tumors, have a high cure rate with appropriate treatment, with a five-year survival rate exceeding 95% in humans (11). A multidisciplinary approach involving surgery, oncology, and radiotherapy is recommended for optimal outcomes. While the specific incidence and characteristics of testicular tumors in bucks are not detailed in the provided papers, the information from canines and humans can offer valuable insights. The principles of diagnosis, treatment, and management of testicular tumors in these species can be adapted to veterinary practice for bucks, emphasizing the need for comprehensive diagnostic and therapeutic strategies (12).

Diagnostic Approaches

Ultrasonography

Testicular ultrasonography in bucks is a valuable tool for assessing reproductive health and potential. It provides a non-invasive method to evaluate the testicular parenchyma, detect lesions, and measure biometric parameters such as scrotal circumference and testicular volume, which are crucial for breeding soundness examinations (BSE) in bucks. The following sections elaborate on the key aspects of testicular ultrasonography in bucks. This imaging technique is crucial for diagnosing scrotal swellings, allowing differentiation between conditions like hydrocele, scrotal hernia, and neoplasms. It provides detailed images of testicular and scrotal structures, aiding in identifying specific pathologies (12). Ultrasonography allows for detailed visualization of the

testicular structure, including the parenchyma, mediastinum, and epididymis. It reveals a homogenous echo-texture with specific echogenic patterns for different testicular components (13;14). In bucks, the seminiferous tubules appear as moderately echogenic regions, while the mediastinum testis is a hyperechoic band, aiding in the clinical assessment of breeding potential (15).

Histological Examination

Histological evaluation of the testis in bucks is a valuable tool for reproductive health and the impact of diverse dietary and immunological challenges. It has been reported that testicular histology is genetically determined but influenced by diet, immunization and environmental conditions, which, on their part, could affect spermatogenesis and general reproductive performance. Histologic changes, including reduced seminiferous tubule diameter and thickened basal membrane. Testis histology still showed homogeneous hypoechogenicity in immunized group, in contrast to the normal formation observed in the control (16). The bucks' testes are also enclosed by a thick connective tissue capsule and are divided into lobules made up of seminiferous tubules, with marked differences in the size of Leydig and Sertoli cells in comparison to rams (17). The testes of bucks have a crimped connective tissue capsule and lobules with seminiferous tubules, and the sizes of Leydig and Sertoli cells show distinctively smaller dimensions than in rams (18). Buck testes appear to have the same structure with a connective tissue capsule and cords of lobules, although their seminiferous tubules are smaller in diameter and are wrapped with a larger thickness of interstitium than in rams (19).

Methodology

Animal of study

A case of male buck belong to animals farm of college of veterinary medicine / University of Baghdad , the buck showed unilateral testicular enlargement (figure1) (length about 11 cm and width 6 cm) with evidence of mild pain during palpation , the sexual desire could not been appeared , it may be due to the animal was in out of reproductive season . The age of the buck was more than 4 years, weight about 24 kg, general condition and health appeared good.

Figure (1): Testicular diameter (testicular enlargement) of a buck.

Ultrasonographic examination

The testicular ultrasonography was performed in animals held by restraining the hind limbs spaced apart so that the scrotal sac could hang freely without any obstacle. The scrotal sac was not shaved, as hair is thinly distributed and does not obscure the mass. The scrotal sac was cleansed with a tissue paper and then covered with an application of gel. An ultrasonographic machine (Draminski portable USGD 5Mhz) was used for the examination. Ultrasound gel was also placed upon the probe, gently pressed onto the surfaces of the testes suspended within the scrotal sac. The pictures were taken from the monitor and saved in an electronic format. Ultrasonographic procedures of the testes (buck). The ultrasonographic examination for the bucks included observation of the longitudes, sagittal and transverse planes for both testes of the buck . 2 Mass in stroma cells with large size of testes and regular ends.

Testicular biopsy for histopathology

Under general analgesia (0.05 mg/kg of Xylazine i/m), the biopsy gun was passed through the skin under ultrasonographic guide up near the testicular mass. A very small biopsy was taken for histopathology. The biopsy tissue, which was stored in 10% formalin, was forwarded to the laboratory to make slides for staining and examination

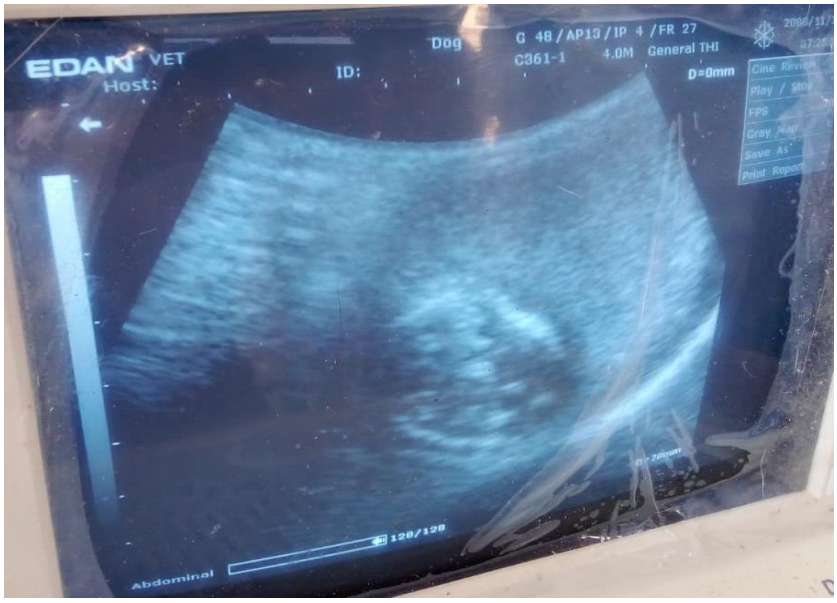

Figure (2): Ultrasonographic examination of buck testis using 5MHz trans abdominal probe

Result

According to the histopathological result, Figure (2A) refers to the presentation of macro-granuloma, consist from nucleus cell aggregate. Testicular granuloma in bucks is an inflammatory disease in which granulomatous nodules are developed due to a number of causes, such as spermatozoa extravasation, etc. This can be confused with testicular tumors leading to considerable diagnostic and therapeutic problems. It is important to be familiar with the pathogenesis and clinical implications of testicular granulomas to ensure successful treatment. Figure (2B) appears that the number of inflammatory cells was high and they are diffused in the testicular stromal cells with infiltration of a little diffused interstitial edema and that may mention presentation of testicular inflammation, orchitis presence.The finding supported the observation of (11) who stated that granuloma usually develops secondarily in response to a chemical reaction of sperm that is located outside the normal pathways, being frequently secondary to trauma or inflammation also agreed with (13) who suggested that in bucks, extravasation of spermatozoa and chronic inflammation increases the possibility of granuloma formation, whereas lesions formed, more frequently in the epididymis than in the testis.

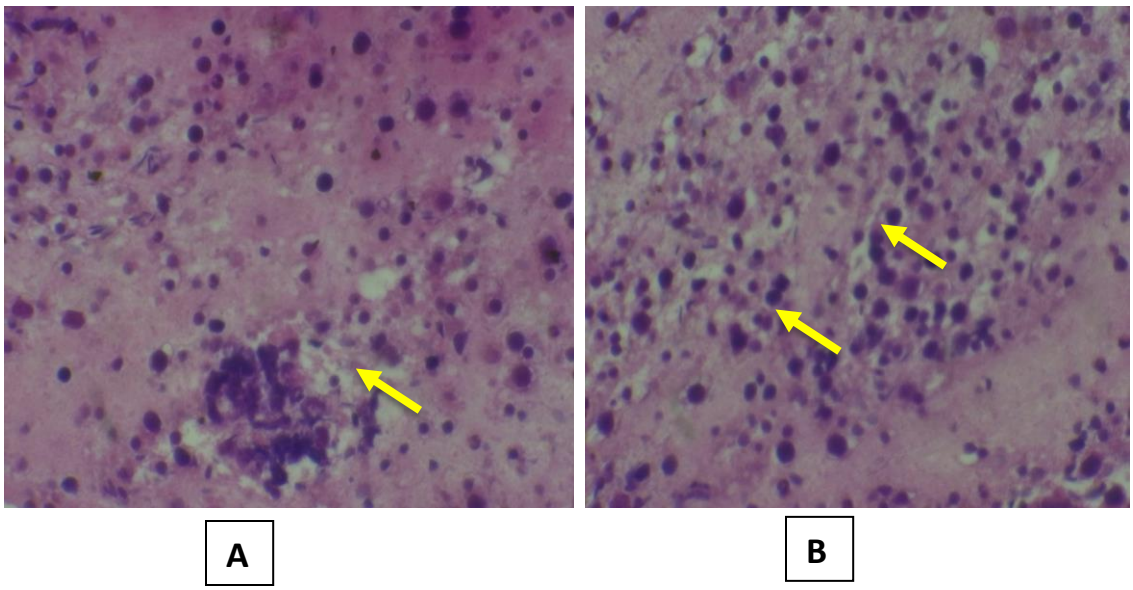

Fig (3) Histopathological section of testes in buck (A): Refer to the presence of macro-granuloma consist from mononuclear cell aggregation .(B) refers to inflammatory cells with interstitial edema . (H and E stain) x400

Treatment

The management of testicular granuloma in bucks is a multistage process wherein the main emphasis is based on the etiological and granuloma-specific considerations. Based on these informations. Management was definitive; it was therefore suggested to make orchidectomy of the infected testis in this case. Testis excision had been performed to suppress the inflammatory response and in order to prevent tumor or cancer, as mentioned by (18). Granulomas may be due to idiopathic inflammation, trauma, or an autoimmune reaction (20) due to the fact that testicular granulomas can like as atesticular mass and raise suspicion for malignancy and in which the management is often an orchiectomy, particularly when malignancy cannot be ruled out. Based on the above presented data, we concluded that the surgical removal is the best choice option to manage this case since Orchidectomy of the infected testes was performed.

Outcome

After Orchidectomy, the case returned to normal condition within 5 days, no general clinical signs were found, the animal showed good health state after treatment.

Conclusion

According to different previous researches that describe such case like, we concluded that, the antibacterial drug had low effect for treatment on testicular granulossa cells mass because of it is a sequence of complication of chronic inflammation leading to tissue transformation to fibrous and

granulomatous tissue so that we decided to made orchidectomy to ride of the infected testes and prevent complication that may occur as like as malignancy.

Conflicts of interest

The authors declare that there is no conflict of interest.

Ethical Clearance

This work is approved by The Research Ethical Committee

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تقرير حالة:تورم الخصية في ذكر الماعز

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الخلاصة

يجب ان يعامل تورم الخصية في الحيوان كحالة خطيرة , وقد ينتج عن العديد من الاسباب مثل العدوى البكتيرية و الفيروسية و الفطرية و قد يتبع ذلك ايضا تورم الخصية. كان تاريخ الحالة هذا هو ظهور علامات تضخم الخصية من جانب واحد على ذكر الماعز, و كانت الحالة العامة جيدة , و لم تظهر الرغبة الجنسية لان الذكر كان خارج موسم التكاثر. تم اجراء فحص بالموجات فوق الصوتية للكشف عن اي شكل من اشكال تكوين الانسجة و تقييم انسجة الخصية . تم اجراء التقييم النسيجي المرضي عن طريق اخذ خزعة من الخصية المصابة باستخدام مسدس الخزعة وفقا لنتائج الفحص بالموجات فوق الصوتية و الاختبار النسيجي المرضي لانسجة الخصية و كان التهابا مزمنا (التهاب الخصية) مع تكوين نسيج حبيبي . يمثل العلاج الجراحي الخيار الافضل للتعامل مع مثل هذه الحالة بحيث تم اجراء استئصال الخصية المصابة

الكلمات المفتاحية : تورم الخصية , اورام الخصية , الموجات فوق الصوتية