

Successful surgical treatment of a penile fibropapilloma in a ram

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Abstract

A 3-year-old Lori-Bakhtiari ram with a history of a mass on the penis was referred to the veterinary teaching hospital of Shiraz University. The owner reported that the presence of the mass prevents the penis from returning to the prepuce. On physical examination, a 3.5cm × 2cm × 2cm mass on the penis was observed. After preparation, the mass was removed and its both sides were sutured. At this time, penis was simply returned into the prepuce and no recurrence was observed until seven months follow-up. No complication was noted in days after surgery. The removed mass was examined histopathologically. Microscopically, the mass was diagnosed to be a fibropapilloma. Although penile fibropapillomas have been described in bull and horse, to the best of authors' knowledge, no report was published about incidence of penile fibropapilloma in ram. Vaccines and immunization are crucial strategies to prevent and reduce the recurrence rate.

Key words: Penis, Fibropapilloma, Ram, Surgery

Introduction

Fibropapillomas are most common in young animals (cattle less than 2, cats less than 5, and horses less than 6 years old) (Heppelmann et al, 2019; Khodakaram-Tafti & Kargar, 2009). The head, neck, and digits of cats, and the head, neck, ventral abdomen, and distal legs of horses are most commonly involved (Goodrich et al, 1998; Schulman et al, 2001). In cattle, these tumors are typically located at the glans penis (Heppelmann et al, 2019). Their attachment to the penile membrane is also broad-based or pendulous (Aydın et al, 2022). Pain or mechanical interference during copulation, due to the presence of the

tumor, can influence the fertility potential of animal; so, surgical removal is the most suitable treatment in animals that are supposed to breed (Aydın et al, 2022). Penile fibropapillomas have been described in bull (Heppelmann et al, 2019; Khodakaram-Tafti & Kargar, 2009) and horse (Gardiner et al, 2008), but, to the best of authors' knowledge, no report has been published about penile fibropapilloma in ram. Hence, the present study aimed to describe the histopathological findings and the treatment of a fibropapilloma on the penis of a ram.

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Case history

A 3-year-old Lori-Bakhtiari ram with a history of a mass on the penis for 25 days was referred to the veterinary teaching hospital of Shiraz University on 20 October 2021. The owner reported that presence of the mass prevents the penis from returning to the prepuce (Figure 1.A). Therefore, the penis was in contact with the ground while sitting and thus became ulcerated and infected. Physical examination revealed a 3.5cm × 2cm × 2cm sessile mass on the penile body. Vital signs (respiratory rate: 27/min, heart rate: 79/min, and temperature: 39.1 °C) and complete blood count (CBC) assessments were performed before surgery (Table 1).

Table 1. Hematological results in the affected ram before the surgery

Parameter	Measured level	Normal range
WBC	10.4 × 10 ³ /μL	4 – 8 × 10 ³ /μL
RBC	10.9 × 10 ⁶ /μL	9 – 15 × 10 ⁶ /μL
HGB	9.7 g/dL	9 – 15 g/dL
HCT	27.6 %	27 – 45 %
MCV	25.3 fL	28 – 40 fL
MCH	8.9 pg	8 – 12 pg
MCHC	35.1 g/dL	31 – 34 g/dL
PLT	373 × 10 ³ /μL	800 – 1100 × 10 ³ /μL
RDW	13.4 %	0 – 50 %
PCT	0.17 %	0 – 2.9 %
MPV	4.6 fL	0 – 20 fL
PDW	12.8 %	0 – 50 %

The normal values were based on the following reference: (Byers & Kramer, 2010)

Surgical procedure and method of diagnosis

Cranial epidural anesthesia using 2 mg/kg lidocaine hydrochloride (Vetacaine[®] 2%, Abouraihan Pharmaceutical Co., Iran) in total volume of 6 mL was carried out, and the ram was restrained in lateral recumbency on a table. Before and during surgery, 10 mg of diazepam (ZEPADIC[®] 10mg/2mL, Caspian-Tamin Pharmaceutical Co., Iran) and one liter of ringer's solution (Shahid Ghazi Pharmaceutical Co., Iran) were administered, respectively. Local anesthesia of the penile mucosa was achieved by splashing of 5 mL lidocaine

hydrochloride (Vetacaine[®] 2%, Abouraihan Pharmaceutical Co., Iran). After prepuce shaving and aseptic preparation, the mass was removed and its both sides were sutured via Silk 0 USP (SUPASIL[®], Supa Medical Devices Co., Iran). At this time, penis was simply returned into the prepuce (Figure 1.B). No active hemorrhage from the incisions was observed during the surgery. Antibiotic therapy included systemic antibiotic of penicillin (30 mg/kg, IM; LOGEXIN[®], Razak Pharmaceutical Labs Co., Iran) which was given once-daily for three days after surgery. Also, ketoprofen (3 mg/kg, IV; Ketomax[®], Rooyan-Darou Pharmaceutical Co., Iran) was administered preoperatively and on the next day of surgery. The specimen of the neoplastic mass was immediately fixed in 10% neutral buffered formalin for 24 to 48 hours. The tissue sample was then dehydrated in a graded ethanol, cleared in xylene, embedded in paraffin wax. The section (5-6 μm thickness) was stained with hematoxylin and eosin (H&E) and Masson's trichrome stains. The slides were examined by a light microscope (Olympus, CX21FS1, Japan).

Results

Grossly, penis was simply returned into the prepuce after surgery (Figure 1.B) and no recurrence of the resected tumor was observed until seven months follow-up. No complication including dysuria or stranguria was noted in days after surgery. Microscopically, there was an increased thickness of the stratum corneum (parakeratosis), prominent epidermal cell hyperplasia especially within the stratum spinosum (acanthosis), as well as an intact basement membrane and mild to moderate irregular epidermal pegs extending into the deep dermis and interdigitate with dermal papillae (Figure 2.A). In the epidermis, many koilocytes were present (Figure 2.B). No abnormalities were observed in the quantity of melanogenesis in the stratum basale and also in keratohyaline granules of

the stratum granulosum in the affected skin. Also, there was dermal reaction containing mild to moderate proliferation of fibroblasts and the various degrees of collagen deposition (Figure 2.C). In Masson's trichrome staining, the dense bundles of the

collagen fibers were observed between spindled-fibroblasts (Figure 2.D). On histopathologic examinations, epidermal necrosis, degeneration (ulceration) and the infiltration of neutrophils were evident.



Figure 1. Penile fibropapilloma in a 3-year-old Lori-Bakhtiari ram. A) A large fibropapilloma mass is marked, B) After resection of fibropapilloma mass.

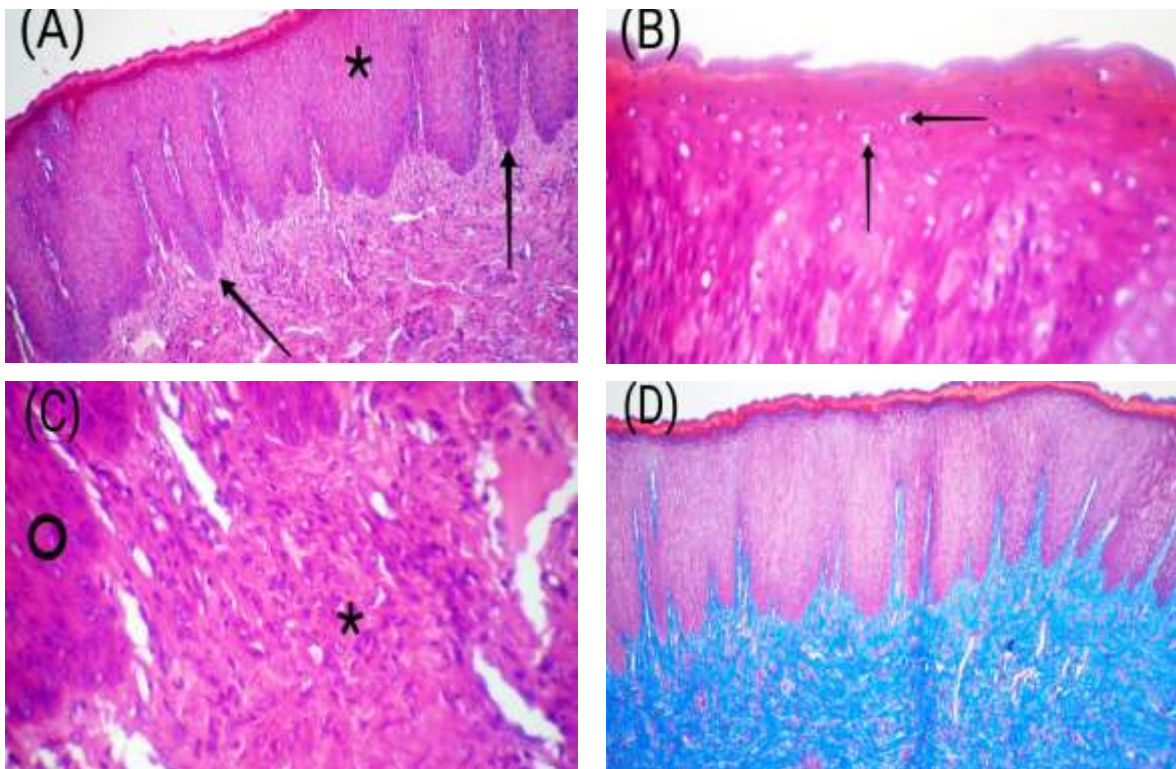


Figure 2. Photomicrographs of penile fibropapilloma in a ram showing (A) epidermal hyperplasia and acanthosis (asterisk) with elongated finger-like rete pegs (arrows) (H&E, X100); (B) many koilocytes in the epidermis (arrows) (H&E, X400); (C) proliferation of dermal fibroblasts and connective tissue or collagenous deposition (asterisk) with overlying hyperplastic epidermal rete ridges (circle) (H&E, X400); (D) the bundles of the collagen fibers between spindled-fibroblasts (Masson's trichrome, X100).

Discussion and conclusion

Fibropapilloma is a transmissible, virus-induced, and benign tumor of penis of especially young bulls that may cause phimosis, paraphimosis or penile prolapse (Borzacchiello and Roperto, 2008; McGavin and Zachary, 2007). Pain or mechanical interference during copulation can influence the fertility potential of animal; also ulcerated surface of fibropapillomas may be a source of contaminants, such as microorganisms and blood, which interfere with cryopreservation of collected semen (Heppelmann et al, 2019). This condition is mostly observed in first season of breeding in bulls which virus finds a way to penetrate into skin (e.g. wound) and induces neoplastic growth of fibroblasts, while the exact pathogenesis is unclear yet (Campo, 1997). Rupture or erosion of the urethra in the area of the tumor can make the situation worse (Heppelmann et al, 2019).

The current study represented the first report of penile fibropapilloma in ram. In the present case, fibropapilloma tumor was surgically removed with minimum bleeding during surgery, while these tumors have so propensity to bleeding when manipulated. The owner was recommended to rest the patient from sexual activity for three weeks in order to complete healing of sutured incision. In the present study,

histopathological examinations revealed similar findings to the other penile fibropapillomas including epidermal hyperplasia and/or rete ridges, acanthosis, koilocytosis, hyperkeratosis, dense bundles of connective tissues, and proliferation of fibroblasts in the dermis (Aydın et al, 2022; Khodakaram-Tafti and Kargar, 2009).

The techniques for removal of penile (fibropapilloma) tumors are surgical resection, electrocautery, laser therapy, and cryosurgery (Gilbert et al, 2017). Recurrence of the resected penile fibropapilloma in bulls can be expected 10-32% especially if the patient is in active level of disease (Heppelmann et al, 2019; Khodakaram-Tafti and Kargar, 2009); however, its rate in small ruminant is unknown. For example, in a previous study, the recurrence of the resected penile fibropapilloma occurred two months after surgical treatment in a young bull (Khodakaram-Tafti and Kargar, 2009).

To avoid spreading the disease, prevention strategies are crucial. Vaccines and immunization can prevent and minimize the recurrence rate of the tumor (Elzein et al, 1991). However, the most optimal approach to preserve a healthy livestock population is through utilization of advanced reproductive technologies, notably artificial insemination.

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Conflict of interest

The authors declare that they have no conflicts of interest.

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درمان موفقیت آمیز جراحی فیبروپاپیلوم قزیب قوچ

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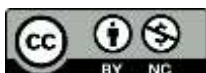
چکیده

یک رأس قوچ نژاد لری-بختیاری ۳ ساله با سابقه توده در ناحیه قزیب به بیمارستان آموزشی دامپزشکی دانشگاه شیراز ارجاع داده شد. صاحب دام اظهار داشت که وجود توده مانع از بازگشت قزیب به غلاف قزیب می‌شود. در معاینه بالینی، توده‌ای به ابعاد ۳/۵ سانتی‌متر × ۲ سانتی‌متر × ۲ سانتی‌متر روی قزیب مشاهده شد. پس از آماده‌سازی، توده برداشته شد و دو طرف آن بخیه شد. سپس، قزیب به سادگی وارد غلاف قزیب شد و تا هفت ماه پیگیری، عود توده مشاهده نشد. هیچ عارضه‌ای در روزهای بعد از جراحی نیز مشاهده نشد. توده برداشته شده از نظر هیستوپاتولوژی بررسی شد. نوع توده از نظر میکروسکوپی، تومور فیبروپاپیلوم تشخیص داده شد. اگر چه فیبروپاپیلوم قزیب در گاو نر و نریان توصیف شده است، اما تا کنون، گزارشی در مورد بروز فیبروپاپیلوم قزیب در قوچ منتشر نشده است. واکسن و ایمن‌سازی راهبردهای مهمی برای پیش‌گیری و کاهش میزان عود هستند.

کلمات کلیدی: قزیب، فیبروپاپیلوم، قوچ، جراحی

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