

There are always reasons to eliminate the European bison – based on the case of POGAJ

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Abstract: The bull POGAJ was eliminated for humanitarian reasons. The decision to eliminate him was based on an untreatable myiasis and clinically observed motor disorders. The anatomical-pathological autopsy revealed an enlargement of the right lobe of the thyroid gland, which turned out to be a colloid goiter on microscopic examination. In addition, nodular changes were found in the liver, which turned out to be a hepatocellular adenoma - a benign tumor originating from the liver tissue. Changes were also found in the right epididymis in the form of cystic growths in the body of the organ. Although we had not expected the changes mentioned here, they were an additional argument for elimination on humanitarian grounds.

Keywords: European bison, wisent, welfare, goiter, neoplasm, myiasis, epididymal cyst

Introduction

We have to ensure the welfare of the European bison, whether in free-ranging populations or captivity. However, if the welfare of the European bison is compromised, the decision to remove it should not be postponed to alleviate the suffering of a protected individual. This description shows that early removal is the only correct action when other methods fail.

Description of the case

On 24 May 2024, a sixteen-year-old bull, POGAJ, pedigree number 11201, living in the enclosure of the Forest Culture Center (OKL) in Gołuchów, was eliminated. The reason for the elimination was persistent myiasis of the skin in the front part of the head. Clinical observation also revealed decompression of the left thoracic spine.

The autopsy revealed several pathological changes:

- In the anterior parietal region, a myiasis focus measures approximately 10x12 cm with numerous eggs and fly larvae in various stages of individual development. The microscopic image of this skin fragment showed epidermal atrophy; the skin surface was covered with a layer of bacteria and necrotic tissue. An inflammatory (mixed) infiltrate separated this area from the healthy tissue. Here, cavities reaching deep into the subcutaneous tissue were visible, in which fly larvae had embedded themselves *in vivo*. Numerous bands of squamous epithelium in a tubular arrangement were visible between these spaces.
- The right thyroid lobe measured 6.0 cm (width), 12.6 cm (length), and 4.4 cm (thickness) (Fig. 1). A slit was visible in the cross-section, from which a clear, brown fluid oozed. Microscopic examination revealed a massive dilation of the lumen of the colloid-filled secretory vesicles (Fig. 2).



Figure 1. Macroscopic image of a cross-section of the right lobe of the thyroid gland. In the center is a longitudinal fissure from which brown flowed out when this organ was cut. (Photo Joanna Peisert-Król)

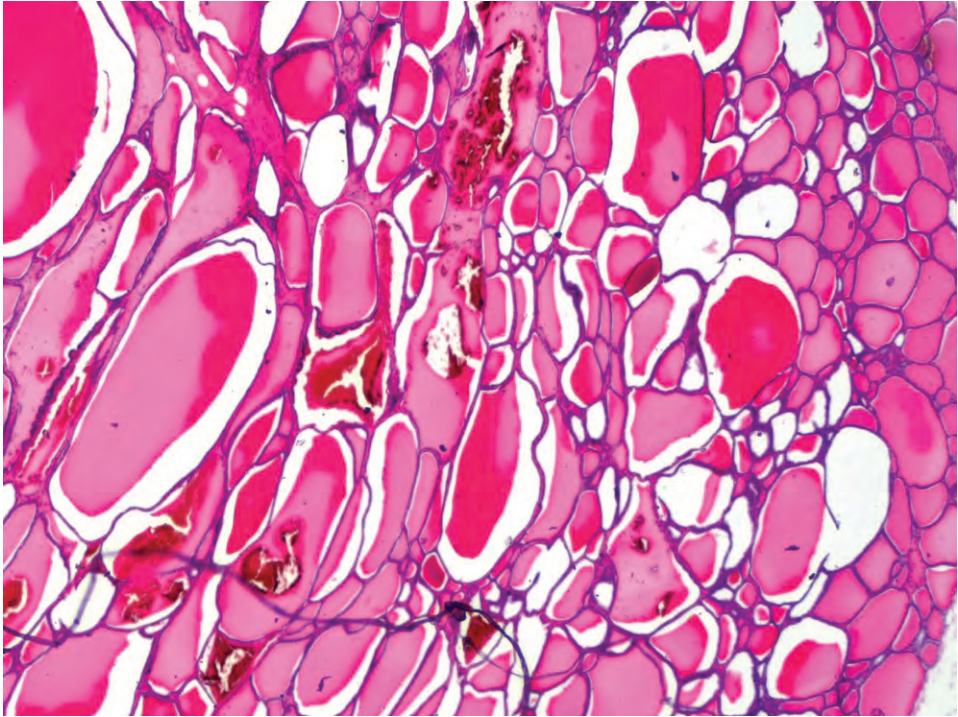


Figure 2. Microscopic image of colloidal thyroid goiter in POGAJ. On the right side of the image, secretory vesicles with a size similar to typical structures are visible. Cystically dilated follicles occupy the remaining area. Staining HE. Magnification objective 2x

Focally, the walls of the follicles were torn, and the colloid was visible outside the lumen of the follicles in the interstitial tissue (ectopia). The changes mentioned above indicate a colloid goiter of the thyroid gland (Jubb *et al.* 2016, vol. 3).

- Macroscopic examination of the liver revealed an enlarged gallbladder; there were numerous cream-colored foci under the capsule of the organ, highlighting the surface of the capsule and causing nodular deformities. The cross-section of the organ showed a massive growth of color from gray-cream to cream-brown (Fig. 3). The nodular masses covered about 2/3 of the volume of the organ. Microscopic examination of the tumor tissue revealed the presence of cells with the morphology of hepatocytes in a tubular arrangement (Fig. 4), with features of moderate atypia (hepatocellular adenoma) (Jubb *et al.* 2016, vol. 2). Focally, under the capsule of the liver, macroscopically visible areas were dark cherry red. The microscopic preparation showed structures of a broad and irregular lumen, separated from the healthy tissue by a massive band of connective tissue.



Figure 3. Neoplastic tumor (hepatocellular adenoma) in the left lobe of POGAJ's liver. (Photo Karol Witt)

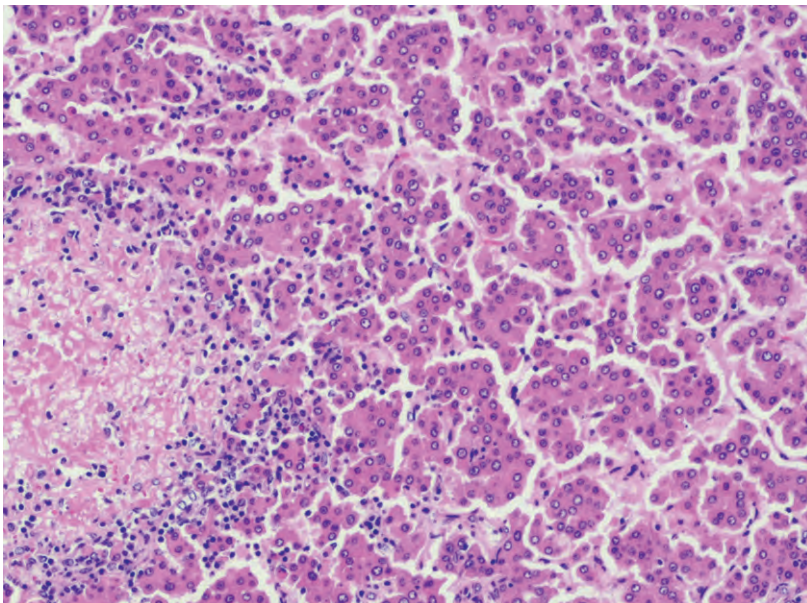


Figure 4. Microscopic image of hepatocellular adenoma in POGAJ's liver. Neoplastic parenchyma cells with the appearance of liver cells in the tubular structure. On the left side is a focus of necrosis surrounded by inflammatory infiltration. Staining HE. Magnification objective 2x



Figure 5. Right testicle with massive multicystic hyperplasia of the epididymal trunk. (Photo Karol Witt)

Inflammatory infiltrates of mononuclear cells were also focally visible in the liver tissue.

- Macroscopic examination of the right testicle showed deformation and fusion of the tunica vaginalis with the tunica albuginea at the area of the epididymal trunk. After dissection of the tunica vaginalis, numerous cysts filled with straw-colored fluid appeared (Fig. 5). They included the trunk of the epididymis and the lateral surface of the testicle. Histopathological examination revealed structures lined with columnar squamous epithelium (Fig. 6). However, in the tissue of the testicular parenchyma, atrophy of the seminiferous epithelium was microscopically demonstrated.
- The presence of a male uterus was confirmed macroscopically.

Discussion

Cystic epididymides have been described by Matuszewska and Sysa (2002) as a congenital disability in 61% of male European bison of various ages. These cysts usually occur singly, most frequently in the head of the epididymis and less regularly in the trunk or tail of this anatomical structure. In the bull that was the subject of our interest, there were numerous cysts and an extensive

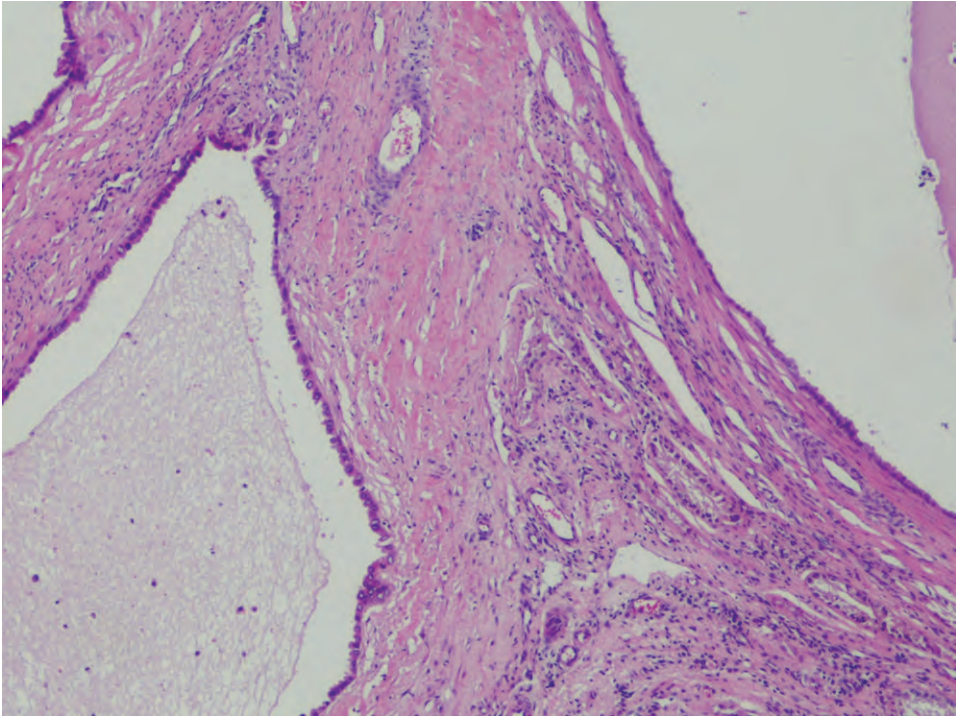


Figure 6. Microscopic image of an epididymal cyst lined with cuboidal epithelium. Staining HE. Magnification objective 2x

grouping formed on the surface of the testis. It is not possible to determine how this affects the behavior of the testicular epithelium (atrophy), since this epithelium naturally does not show its full activity during the period in which the bull was eliminated (May).

A male uterus in European bison bulls is a common phenomenon. Our research shows that this developmental defect occurs in about 50-55 % of bulls in free-ranging herds and in over 90 % of bulls in confined breeding herds (Bielecki, 2011).

The European bison POGAJ was eliminated due to chronic inflammation of the scalp and musculoskeletal disorders. The anatomic-pathologic examination also revealed a neoplastic disease of the liver. Although the tumor that had developed in this organ was not malignant, due to its size, it must be assumed that it could significantly impair the performance of the liver and, thus, the metabolism. The autopsy also revealed changes in the thyroid gland that could lead to hormonal disorders.

So, was the decision to remove it for humanitarian reasons not right?

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Zawsze jest powód eliminacji żubra na przykładzie samca POGAJ

Streszczenie: Byka POGAJA eliminowano ze względów humanitarnych. Podstawą decyzji o jego eliminacji była muszycy niepoddająca się terapii oraz klinicznie obserwowane zaburzenia motoryki.

W trakcie sekcji anatomopatologicznej ujawniono powiększenie prawego płata tarczycy, co w obrazie mikroskopowym okazało się wolem koloidowym. Stwierdzono także guzowate zmiany w wątrobie, które okazały się – gruczolakiem wątrobowokomórkowym - niezłośliwym nowotworem, pochodnym tkanki wątrobowej. Obserwowano również zmiany w najądrzu prawym, w postaci torbielowatych rozrostów w trzonie narządu. Choć wymienionych tu zmian nie spodziewaliśmy się, to były one dodatkowym argumentem na rzecz eliminacji ze względów humanitarnych.
