Case #1

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SIGNALMENT: 6-month-old, male, Italian Frison, *Bos Taurus*, Bovine.

HISTORY: a 6-months-old veal calf was slaughtered. Sample of various organs were collected for histological analysis. These histological analysis were performed as part of a research project on public health, regarding illegal hormonal treatments and animal welfare.

GROSS PATHOLOGIC FINDINGS: no gross changes were present at post-mortem examination.

MORPHOLOGIC DIAGNOSES: Prostate, urethral epithelium: squamous metaplasia, mild, multifocal; glandular epithelium hyperplasia, mild to moderate, diffuse; Italian Frison, bovine.

COMMENT: lesions were identified within the slides from prostate tissue. The lesions consisted of mild to moderate, diffuse, hyperplasia and multifocal areas of mild squamous metaplasia of the urethral epithelium. Metaplastic cells borders were angular and evident and the cytoplasm was highly eosinophilic and homogeneous. Nuclei of metaplastic cells appeared typically large and oval, with grossly clumped chromatin.

In Europe there are official restrictions regarding treatments of beef animals with a specific list of substances. Sexual hormones, corticosteroids and tireomodulants are, like many others, not allowed. However, several observations indicate that different molecules are illegally used together in a mix in order to take advantage from each single molecule mechanism and in order to use lower quantities of each substance, being in this way more difficult to be detected by official control analysis. In the latest years food safety has acquired a relevant role in many fields (animal and vegetal alimentary products) and hormones used in beef animals are known to be able to interfere with human health. Thereafter, the interest of some European research groups to be able to assess presumptive illegal treatments *via* histological examination of some bovine tissues (i.e. prostate and thymus) has increased.

Squamous metaplasia of the urethral epithelium and of the prostate epithelium has been described in experimentally treated bovines (1, 3), particularly in animals treated with estrogens. Location and severity of the lesions seems to be directly correlated to the intensity of the treatment (2). Based on experimental data from our project (data not published), the urethral epithelium seems to be more sensitive to sexual hormones than the prostate epithelium. The urethral epithelium is however highly sensitive to several other paraphysiological situations (*i. e.* illness, inflammation, growth). In addition lesions

are very mild or minimal and mostly focal. In the glandular part of the prostate only very small areas of initial metaplasia are normally seen. Therefore, different groups are working, at present, on histochemical changes of the cellular membranes (*i. e.* glycolipids modification due to sexual hormones action) (2, 3).

The lesions observed in this case may have been caused by anabolic hormonal treatment.

REFERENCES:

1. Poppi L., Biolatti B., Villan C., Zappulli V., Petterino C., Castagnaro M. *Histopathological and lectin histochemical findings in prostate and bulbo-urethral glands of experimentally hormone-treated male veal calves.* 20th ESVP Meeting, 2002, Grugliasco (TO)

2. Risbridger GP, Wang H, Frydenberg M, Cunha G. *The metaplastic effects of estrogen on mouse prostate epithelium: proliferation of cells with basal cell phenotype.* Endocrinology 2001; 142: 2443-50

3. Groot M.J.: *Histological screening for illegal administration of growth promoting agents in veal calves.* ed. Ekwijk – Utrecht, 199