

PROSTATE CANCER DIAGNOSTIC PROTOCOL - WHAT ARE THE PIECES OF THE PUZZLE

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Abstract

Prostate cancer is a malignant disease with high incidence in dogs aged over 10 years, favored by sexual hyperfunction associated with a high protein diet. Chronic inflammatory lesions (prostatitis, cysts, etc.) are precancerous lesions and undiagnosed and treated early can degenerate into malignant lesions.

Diagnosis is based on laboratory tests: ultrasound, urine cytology, contrast radiography, puncture aspiration through ecography or trans-perineal, blood works and specific detection of tumor markers.

By using several diagnostic methods we are trying to establish the baseline of malignization with the beneficial consequences of establishing early, curable therapy protocols with consequent prolongation of survival and increased comfort.

Early screening for diagnosis and treatment of various diseases, like chronic inflammatory lesions (prostatitis, prostatic cysts, etc.) may prevent malignancy or even block or allow the detection of the process of cancerization in early stages with decreasing tumor metastasis and reduce the chances of suffering patients.

Key words: prostate, cancer, biopsy, endoscopy, ultrasound.

INTRODUCTION

Clinical diagnosis began with patient history: race / age on clinical signs , clinical signs observed by the owner , difficult urination , hematuria .

In general the digital rectal exam will be correlated with ultrasound data and this will help with the differential diagnosis of prostate tumors , cyst or abscess , prostatic hypertrophy , so surgery would be performed solely for exploratory or harvesting a piece of parenchyma in order to perform a histopathological examination if indicated.

Multidisciplinary diagnosis is based on laboratory tests: ultrasound, urinalysis, cytology, contrast X-ray, fine-needle aspiration, transperitoneal ultrasound, hematology and especially blood biochemistry

detect specific tumor markers, namely acid phosphates, PSA (prostate specific antigen) and fibrinogen.

MATERIALS AND METHOD

We had a number of 33 male patients (dogs) of different breeds, medium and large built, with ages between 6 and 12 years. The dominant symptoms were: hematuria, kyphosis and constipation.

Starting with the clinical exam and recording the information in the oncology medical charts. Besides the classic history, very important is the life style of the patient (food, water, food supplements, if the animal lived in the house or outside, the city where the patient lives, if it was vaccinated, de-wormed or neutered)

22 out of 33 patients were submitted to complete blood tests, a spine and legs rx, an ultrasound of the pelvic area and urine testing.

8 patients underwent a rectal exam, complete blood test, several ultrasounds and a biopsy

2 patients underwent abdominal ultrasound, blood tests and rectal exam

1 patient had an MRI, an abdominal ultrasound, complete blood tests and urine testing.

RESULTS AND DISCUSSIONS

Our patients that underwent complex tests had a more personalized treatment protocol. Beginning with the rectal exam, complete blood tests, including specific blood tests (PSA, prostatic acid phosphatase and total prostatic phosphatase), ultrasound, Rx (for possible bone metastasis), urine tests, fine needle-aspiration biopsy and a contrast MRI, every investigation is a piece of the puzzle and help for a better imagine for a treatment for the whole body.

Inspection and palpation of the prostate gland through a rectal exam is done so you can appreciate the size of the male genital annexe glands. The slipping of the prostate beyond the pubic threshold signifies an appreciable increase in its volume. Also modified contour (regular, irregular) and endured structure may signify the development of a tumor process.

P.S.A. (Prostatic Specific Antigen) / Arginin esteraza is a glycoprotein, a serine protease biochemically formed exclusively in the prostate gland, increasing its level suggesting the presence of prostate cancer. A small percentage is free, being called P.S.A. unbound (free). In prostate cancer, the report free P.S.A. / total P.S.A. decreases, lower it is, the higher the risk of prostate carcinoma.

Although ultrasound can not provide data about the function of the prostate, providing valuable information about the morphology of the prostate, which has been useful in determining the size, shape and internal architecture of the prostate gland. In addition, ultrasound has the advantage of not using ionizing radiation, contrast substances, and if the animal is not cooperating and if biopsy is not necessary, there will be no need to sedate the patient. Ultrasonography enables the early identification of changes in the parenchyma, differentiation between solid neoformations and fluid-filled cavities.

Although it is not decisive and does not directly contribute to the diagnosis of prostate cancer, radiography brings useful data for differential diagnosis and detection of metastases. It facilitates the differential diagnosis of prostatic nodules palpable by rectal examination, as well as highlights bone metastases at some stage of their development. Putting together the bladder and kidney images and a chest x-ray with the

knowledge of possible bone metastasis in pelvic bones, vertebrae, femur bones and ribs, so almost the entire skeletal potentially exposed to cellular invasion from the prostatic neoplasm we have a complete imagine. Cytological investigation is the method that is suitable for inflammatory lesions, tumors with epithelial origin and tumors with abundant stroma. Puncture aspiration was performed on awake animals, anesthesia is required only for uncooperative patients.

Histological examination was performed by scraping the surface of prostate tissue samples obtained by biopsy, displayed as colored smears with the May-Grunwald-Giemsa method. Remaining fragments were then fixed in 10% formaldehyde solution and paraffin embedded. Obtained sections were stained with Masson trichrome method (hematoxylin-eosin methylene blue).

Biopsy is an invasive surgical technique indispensable as a diagnostic tool in case the other diagnostic methods were not sufficient to assess the evolutionary stage of an animal affected by cancer. Biopsy results must be interpreted with caution and in combination with the results of other diagnostic procedures, such as blood tests, X-rays and other medical imaging techniques.

Animal: Specie Canină, Rasa Boxer, Sex M, Varsta 10 ani

Parametru	UM	Rezultat	Val de referinta
Fosfatază acidă totală	UI; 37°C	148	Sub 135
Fosfatază acidă prostatică	UI; 37°C	72	Sub 65

Figure 1 Blood analysis for a patient with prostatic carcinoma (Dr. Cornila Mihai)

Animal: Specie Canină, Rasa Metis, Sex M, Varsta 11 ani

Parametru	UM	Rezultat	Val de referinta
Fosfatază acidă totală	UI; 37°C	163	Sub 135
Fosfatază acidă prostatică	UI; 37°C	91	Sub 65

Figure 2 Blood analysis for a patient with prostatic carcinoma (Dr. Cornila Mihai)

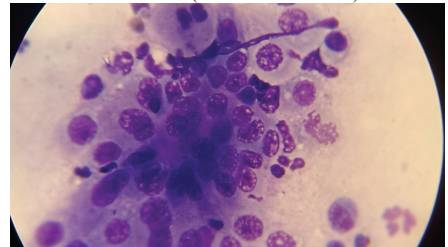


Figure 5 histological image of the prostate

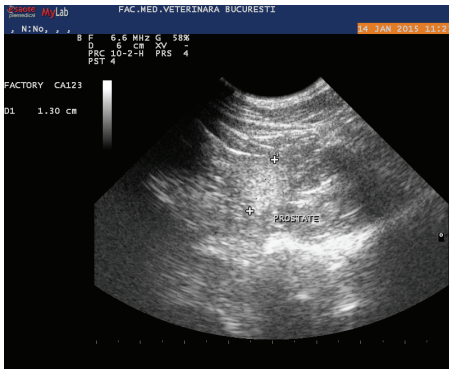


Figure 3 Paraprostatic cyst – ecography (Dr. Constantinescu Radu)

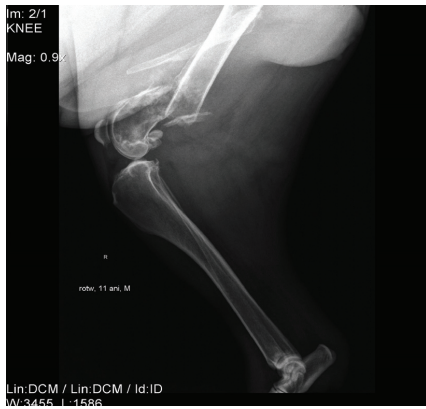


Figure 4 Pathological break over bone metastasis

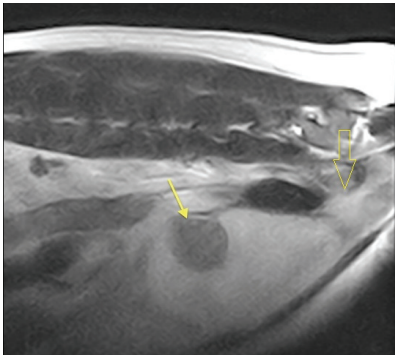


Figure 6 Tumour in the urinary bladder (small yellow arrow) and prostate benign hypertrophy (larger yellow arrow) - MRI (Dr. Grosu Florin)

CONCLUSIONS

Chronic inflammatory lesions (prostatitis, cysts, etc.) are precancerous lesions and

undiagnosed and treated early can degenerate into malignant lesions.

Screening for early diagnosis and treatment of various diseases, from chronic inflammatory lesions (prostate hypertrophy, prostate cysts, etc) can prevent or block the malignancy process or allow the detection of early stages with decreasing tumor metastasis and reduce the chances of suffering for the patients.

Investigations with specific markers allow the identification of neoplastic cells thus the early diagnosis of prostate cancer, before emphasizing the clinical symptoms.

By using several diagnostic methods we are established the baseline of the malign process with beneficial consequences related to the establishment of early, curable therapy with consequent prolongation of survival rates and increased comfort

Without proper investigations we are blind to the correct treatment protocol

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