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Peroxidation processes in mitochondria and microsome of human prostate tissues at different pathology

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Introduction and Objectives: Activation of lipid peroxidation and oxidizing damages inducing by reduce of antioxidant system, plays an importance or principal role in pathogeneses. These are condition of various cancers, inflammatory process, arterioscleroses and other diseases. Therefore, we studied the alternation of lipid peroxidation, catalase activity and amount of H_2O_2 in mitochondrial and microsomal fractions of human prostate tissues at different pathology.
Material and Methods: Human post-operational fiber-muscular prostate tissues with following pathological forms: benign prostatic hyperplasia (BPH), prostate intraepithelial neoplasia (PIN) and prostate atypical adenomatous hyperplasia (AAH) were used as experimental material. The lipid peroxidation was assessed by the malonildialdehyde (MDA). Catalase activity and amount of the H_2O_2 were determined by the colorimetric method according to Aebi.
Results: The statistically treatment of experiments has been revealed that the amount of MDA was significantly increased in PIN tissue compared with BPH. From the other side, amount of MDA was significantly increased in subcellular fractions of AAH tissue compared with PIN. This effect is comparative much towards BPH. Catalase activity and amount of H_2O_2 were assessed in all tested prostate tissues also. The obtained results show that it takes place the respectable reduction of catalase activity as mitochondria as microsome in PIN and prostate AAH tissues as compare with BPH. Herewith level of H_2O_2 is increased in both – mitochondrial and microsomal fractions with complication of BPH (in PIN and AAH tissues). There is not significant change of the catalase activity and the amount of H_2O_2 among PIN and prostate AAH tissues.
Conclusions: Therefore the lipid peroxidation is increased, the catalase activity is fallen down and the amount of H_2O_2 is increased in the mitochondria and microsome with complication of prostate disease. It is clear, that intensification of peroxidation processes provokes oxidizing damages, that condition of neoplasic growth of prostate cells.

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The prognostic role of PSA Density in the detection of prostate cancer in men with PSA 4–10 ng/ml and negative both digital rectal examination and transrectal ultrasound

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Introduction and Objectives: Detection of prostate cancer in men with PSA 4–10 ng/ml and negative Digital Rectal Examination (DRE) and Transrectal Ultrasound (TRUS) is a real challenge. This study aims to examine the prognostic role of PSA Density (PSAD) in this group of men, setting different cut-off values and estimating sensitivity and specificity in each case.
Material and Methods: Retrospective study. From 1/2008 to 3/2009, 173 men aged 53–82 years old with PSA 4–10 ng/ml and negative both DRE and TRUS, were subject to TRUS guided needle biopsy. PSAD was measured and its sensitivity and specificity were estimated for five cut-off values, from 0.15 ng/ml/cm^3 to 0.2 ng/ml/cm^3. The procedure was accomplished by the same urologist and biopsy specimens were examined from the same pathologist. Biopsies obtained with 18-gauge biopsy needles.
Results: From 173 men, 65 were diagnosed with prostate cancer. In the rest 108, no malignancy was found after three biopsies with one month intervals approximately. Mean PSAD in men with prostate cancer was 0.199 while in men with BPH was 0.158. Sensitivity and specificity of PSAD in the detection of prostate cancer were 80% and 44.4% for a cut-off point of 0.15, 80% and 53.7 for 0.16, 76.9% and 60.18% for 0.17, 61.53% and 69.4% for 0.18, 52.3% and 73.14% for 0.19 and finally 44.6% and 76.8% for a cut-off point of 0.2. Positive prognostic value was estimated for each cut-off point.
Conclusions: PSAD alone is not an adequate tool in detecting prostate cancer in men with PSA 4–10 ng/ml and negative DRE and TRUS. Efforts should be undertaken in establishing a more sensitive and specific markers or combining the already existing markers.

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Transrectal ultrasound-guided prostate biopsy, periprostatic local anesthesia and pain tolerance

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Introduction and Objectives: We have evaluated objectively pain tolerance in transrectal ultrasound-guided prostate biopsy (TRUS) using local periprostatic anesthesia applied intrarectally, compared to the conventional method.
Material and Methods: From November 2008 to May 2009, 90 patients underwent transrectal ultrasound-guided prostate biopsy at Departmentof Urology, Clinical Center University Sarajevo. 90 patients whofulfilled the inclusion criteria were randomized into 3 groups of 30 patients each. Group 1 received periprostatic local anesthesia with 2% lidocaine, group 2 recived Voltaren supp placed in rectum an hour before biopsy while group 3 received no local anesthesia. Pain scaleresponses were analyzed for each aspect of the biopsy procedure with avisual analog scale of 0-none to 10-maximal.
Results: There was no difference between the 3 groups in pain scoresduring digital rectal examination, intrarectal injection and probe insertion. The mean pain scores during needle insertion in group 1 receiving periprostatic nerve block and in group 2 receiving Voltaren supp. were 3.10 ± 2.32 and 5.15 ± 2.01. In group 3 (no local anesthesia) were 6.06 ± 2.95, respectively, and were found to be significantlydifferent ($p < 0.001$), but morbidity after the biopsy was notstatistically different between all 3 groups.
Conclusions: TRUS-guided prostate biopsy is a traumatic and painful experience, but the periprostatic blockage use is clearly associated with more tolerance and patient comfort during the exam. It is an easy, safe, acceptable and reproducible technique and should be considered for all patients undergoing TRUS biopsy regardless of age or number of biopsies.

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Initial 24-core biopsy improves the detection of clinically significant prostate cancer and high grade prostatic intraepithelial neoplasia in men with PSA less than 10 ng/ml

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Introduction and Objectives: There is still much debate regarding the optimal number of cores taken at the initial prostate biopsy. The aim of the study is to evaluate the incidence

of prostate cancer, high grade prostatic intraepithelial neoplasia (HGPIN) and perineural infiltration rates in men who had initial 24-core biopsies and to compare the results with a similar group of men who had initial 10-core biopsy protocol

Material and Methods: We retrospectively reviewed the contemporary maintained prostate biopsy database of men undergoing prostate biopsies for the first time in two referral centers by using the 10 (Group A) and 24 (Group B) biopsy protocols. Indications for biopsy were abnormal digital rectal examination and elevated age specific PSA Men were stratified according to biopsy protocol and PSA levels. Exclusion criteria were age ≥75 years, PSA > 20 or <2.5 ng/ml and clinical stage more than T2. The Mann-Whitney U and Fisher's exact test were used for statistical analysis.

Results: Between April 2004 and August 2007, 2169 men underwent TRUS prostate biopsies at these two referral centers from which 379 were eligible for the study. Group A (10-cores) consisted of 243 (64.11%) men and group B (24-cores) included 139 (35.89%) men. The overall prostate cancer detection rate was 39.09% and 34.55% in Group A and B, respectively ($p = 0.43$). An overall 9.8% increase in Gleason 7 detection rate was found in Group B ($p = 0.24$). The HGPIN detection rate in men with negative biopsies was 15.54% and 35.55% in Group A and B, respectively ($p < 0.001$). Regarding patients with PSA < 10 ng/ml, the 24-core technique increased Gleason 7 detection rate by 13.4% ($p = 0.16$) and HGPIN by 23.4% ($p = 0.0008$), compared to the 10 core technique. The 24-core technique increased the concordance between needle biopsy and prostatectomy specimen compared to 10-core technique ($p < 0.002$). There were no differences in perineural infiltration rates between both groups.

Conclusions: Initial 24-core biopsy protocol increased the detection of clinically sig nificant prostate cancer, HGPIN and improved the prediction of radical prostatecto my Gleason score in men with PSA < 10 ng/ml. It can be beneficial in a selected group of patients who are candidates for active surveillance.

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Trans-rectal ultrasound guided prostatic biopsy

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Introduction and Objectives: Trans-rectal ultrasound guided prostatic biopsy (TRUSgPB) is the most commonly used system for diagnosis of prostate cancer (PC). The indications are suspicious digital rectal examination (DRE), increased PSA and PSA velocity (>0.75–1.0 ng/dL/yr), low ratio F/T PSA, prior initiation therapy of 5α-reductase inhibitors, follow-up biopsy (3–6 mo) after diagnosis of high-grade PIN or ASAP, to diagnose failed radiation therapy before use of second-line therapy. The aim of this study was to analyze our rate of PC detection, its Gleason score and volume on biopsy and extracapsular extension (ECE), which are the most important prognostic factors.

Material and Methods: We have analyzed 190 patients retrospectively from 01.09.2008 to 01.06.2009, to whom we have performed extended TRUSgPB with local prostatic block analgesia and oral antibiotic prophylaxis. It was their first biopsy. The average age of the patients was 65.5 years (44–85).

Results: The indications for this procedure were abnormal DRE (98pts-51.57%) and only rising PSA level (92pts-47.89%). Of the 190 biopsies that have been done 86 (44.21%) were with Adenocarcinoma of the prostatae results; 67 (35.2%) - Prostatitis chr; 22 (11.5%) Hyperplasia prostatae; 19 (10%) – PIN High grade and ASAP. PC was found in the following age periods: 40–49 years old 3(1.57%); 50–59 -29(15.26%); 60–69 62(32.63%); 70–79 – 68 (35.7%) and over 80 years old -18 (9.47%). The PSA values of 0–4 had 5 patients (7.2%) and 2 pts had ACP-2.32%; 4–10 -86 pts (45.26%) had ACP 25 pts -29.06%; 10–20 -51 (26.84%) and 27 had ACP -31.39%; above 20 -35pts (18.42%) and 32 had ACP -37.2%. Complications were hematospermia in 62 pts (32.63%); Bleeding from urethra and bladeer in 31 pts (16.3%); rectal bleeding in 8 pts (4.21%); fever in 4 pts (2.1%); urosepsis in 2 pts (1.05%).

Conclusions: TRUSgPB is the gold standard for diagnosis of prostate cancer, which is the most common male cancer in developed countries. The use of PSA testing in serum and TRUSgPB allows us to detect the prostate cancer at a potentially curable stage, 5–10 years before giving rise to symptoms and on averagely 17 years before causing the death of the patient. Massive usage of TRUSgPB and PSA have also led to overdiagnosis detection clinically not significant cancers. Our everyday-task with the help of diagnostic tools, staging procedures and prognostic factors recognizes not only diagnosis of PC nor cases that should not be treated and group of patients who will benefit the most from early and active therapy. It's still a very controversial issue because PC is a histologicaly heterogeneous and multifocal disease.

S32
Effect of finasteride on the sensitivity of PSA to detect prostate cancer in rebiopsy series

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Introduction and Objectives: According to a secondary analysis on patients enrolled in PCPT, finasteride seems to improve accuracy of PSA in diagnosis of prostate cancer. However, PCPT was designed specifically to evaluate the efficacy of finasteride for chemoprevention of prostate cancer. Our aim is to evaluate, in a prospective study, the diagnostic accuracy of PSA in patients with prior negative prostate biopsy findings who were given finasteride for 6 months.

Material and Methods: We evaluated the diagnostic accuracy of PSA in detecting prostate cancer in rebiopsy series. The study cohort consisted of 91 men with prior negative biopsy findings, including HGPIN and excluding ASAP. All patients were instructed to take finasteride 5 mg daily for 6 months. Prostate biopsy was repeated at 6 months and the findings were compared to the initial results. PSA levels were measured at study onset and after 1, 3 and 6 months. We calculated the ROC curve of PSA under the effect of finasteride for detecting prostate cancer. All patients were evaluated at study onset and after 6 months by clinical examination, digital rectal exploration (DRE), International Prostate Symptom Score (IPSS) and National Institutes of Health Chronic Prostatitis Symptom Index (NHI-CPSI).

Results: The mean patient age was 68 years (66.7–69.4). The mean PSA level was 7.48 ng/ml (6.06–8.89). 84 patients completed the study with rebiopsy; 14 of these patients refused the rebiopsy. 7 were lost to follow-up due to poor compliance. Of the 70 patients, 13 were diagnosed with prostate adenocarcinoma. The median PSA level decreased similarly both in those with prostate cancer and in those without findings of cancer. There was no statistically significant difference between the two groups. The areas under ROC curve (AUC) of PSA at study onset and after 6 months of therapy with finasteride were, respectively, 0.484 (95% CI 0.363 to 0.606) and 0.543 (95% CI 0.420 to 0.663) (Figure 1). There was no statistically significant difference between the two areas.