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Serum levels of markers in early detection of prostate (pilot study)

Background: Monitoring changes in the levels of biomarkers PSA, %freePSA, [-2]proPSA and calculation of PHI in the diagnostic algorithm of early prostate cancer.

Patients and Methods: The Immunoanalytical Laboratory of University Hospital in Pilsen examined sera of 76 patients from the Urology Department of the University Hospital with suspected prostate cancer who have undergone TRUS biopsy. We assessed the levels of PSA and, when the interval of PSA was between 0-30 ng/mL, we also assessed the levels of freePSA, [-2] proPSA and we calculated %freePSA and Prostate Health Index (PHI). The monitored biomarkers were measured using the chemiluminescent DxI 800 instrument (Beckman Coulter, USA). All statistical analyses were calculated using the SAS version 9.2software.

Results and Discussion: We found statistically significant increased levels of [-2]proPSA and PHI in patients diagnosed with prostate cancer by prostate biopsy vs. patients with benign prostate hypertrophy ([-2]proPSA median 14 vs. 27 pg/mL, PHI median 35 vs. 77). On the contrary, we did not find any significant difference in tPSA and %freePSA (median tPSA 7.1 vs. 7.7 ng/mL and %freePSA 16 vs.11.4%).

Analyte	Units	Reference range	Instrument
tPSA	ng/mL	Age adjusted	DxI 800, Beckman Coulter, USA
fPSA	ng/mL	-	DxI 800, Beckman Coulter, USA
[-2] ProPSA	pg/mL	-	DxI 800, Beckman Coulter, USA
%fPSA	%	20-100%	calculated
PHI	-	>40	calculated

Analyte (Units)		PSA (ng/mL)	proPSA (pg/mL)	%freePSA (%)	PHI (-)
Diagnosis	Count (N)	Median (Min – Max)	Median (Min – Max)	Median (Min – Max)	Median (Min – Max)
Benign histology	50	7.13 (2.58 – 30.3)	13.7 (3 – 110)	16 (1.8 – 48)	35 (13 – 155)
Malignant histology	26	7.68 (4.64 – 30.5)	22.5 (8.2 – 111)	11 (4.3 – 31.7)	69 (42– 117)

Conclusion: The assessment of [-2]proPSA and the calculation of PHI appear to be of great benefit for a more accurate differential diagnosis of benign hyperplasia.

Biography

Ondrej Topolcan is the Head of Immunoanalytical Laboratory Medical School Pilsen, Department of Nuclear Medicine Faculty Hospital Pilsen, Charles University, Prague. He is also Deputy Director of Faculty Hospital Pilsen for research and science. He is national representative and member of National Board European Association for Predictive, Preventive & Personalized Medicine (EPMA) and member of Academic Board EPMA. His research is particularly dedicated to the biomarkers related to endocrinology, oncology and internal diseases. He has been organizing National Immunaoanalytical Conference in the Czech Republic as well as many international meetings related to the biomarkers. He was awarded Carl R. Jolliff Award by AACC in 2011.

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