“Glutatione-S-Transferase (GSTP1): a Plasma Molecular Marker to Define the Risk of Prostate Cancer.”

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PURPOSE
The most common somatic epigenetic alteration in prostate cancer (PC) is hypermethylation of the glutathione-S-transferase (GSTP1) gene promoter. A good clinical diagnostic marker should be easy to detect through minimally invasive procedures and we thus evaluated the performance of GSTP1 promoter methylation in blood samples from subjects with or without PC.

EXPERIMENTAL DESIGN
This prospectively planned case-control study was conducted on 24 young healthy donors (HD), 75 patients with benign prostatic hypertrophy (BPH) and 75 with PC. Plasma-circulating DNA was modified by bisulfite treatment and GSTP1 methylation status was evaluated by methylation-specific PCR.

RESULTS
The assay exhibited a sensitivity, specificity and accuracy of 80%, 100% and 84.8%, respectively, when HDs were considered as control group and 80%, 60% and 70.0% when BPH patients were used as controls. Good sensitivity was found for the detection of PC at each PSA range considered, in particular, for values ranging from 2.5 to 4 ng/ml (87.5%). No correlation was found between GSTP1 methylation status and prostate volume, Gleason Score or tumor stage. Although all young HDs tested negative in the assay, an age-related increase in positivity was observed in BPH and PC patients. The highest accuracy was obtained for the detection of PC in subjects >65 years with PSA values ≤4 ng/ml (92.3% sensitivity).
CONCLUSIONS
Our results suggest that the combined analysis of PSA levels, age and GSTP1 hypermethylation could represent important new criteria for the diagnosis of prostate cancer.