

Investigation into a novel, but simple, non-invasive approach for detection of genitourinary cancer.

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Cancer remains one of the most formidable diseases of mankind. Genitourinary cancers, such as those involving prostate (CaP) and bladder urothelium, are common malignancies. However, their non-invasive diagnosis remains challenging. Our investigation pertains to the use of voided urine, in which we selectively identify shed cancerous cells (SCC) by targeting a specific genomic biomarker to distinguish them from normal epithelial cells optically.

Urine samples (n=203) were collected from normal volunteers (n=53, M=22, F=31) and from patients with CaP (n=76), BUC (n=35, M=25, F=10), benign prostatic hyperplasia (BPH) (n=4), and with other non-oncologic complaints (n=35, M=14, F=21). The protocol was IRB exempt as no health record was required to be collected.

74/76 CaP patients had SCC (97.4%), one was negative for SCC (1.3%), and one was unclear. For BUC, 33/35 (94.3%) had SCC, one was negative (2.8%), and one was technically unclear (2.8%). None of the 4 BPH had SCC (100%). In 53 normals, 11 had SCC (20.7%), 32 were negative (60.4%), and 10 were unclear (18.8%). In miscellaneous 35 subjects, 19 (54.3%) had SCC, 13 (37.1%) were normal, and 3 (8.6%) had technically poor quality.

The method is simple, noninvasive, rapid, and detects SCC with a high sensitivity in voided urine of patients with CaP and BUC.

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