

PROSPECTIVE, MULTI-CENTER STUDY OF NMP22 AND CYTOLOGY IN PATIENTS WITH HEMATURIA Gennaro A. Carpinito*, Daniel B. Rukstalis*, Lakshmi V. Pandrangi^b, Ashok Agarwal^b, Andrew C. Novick^b, Craig D. Zippe^b. * Boston, MA. ^aPhiladelphia PA, ^bCleveland, OH.

INTRODUCTION AND OBJECTIVES: Hematuria, either gross or microscopic, is the most common presenting symptom of bladder cancer and requires a thorough investigation. The standard urologic evaluation following hematuria is cystoscopy and intravenous pyelography (IVP). The purpose of this study was to determine the utility of two non-invasive tests, NMP22 and urine cytology, in hematuria patients, for the detection of transitional cell carcinoma (TCC). The objective was to determine the optimal screening protocol in which the two tests could be optimized to detect all tumors and, possibly, to decrease the amount of cystoscopies.

METHODS: Three hundred and fifty three patients with a recent episode of microscopic hematuria, gross hematuria or other indication (chronic irritative symptoms in the absence of UTI) for risk of cancer presented to three different institutions in the United States. None had a previous history of cancer. Each patient provided a single voided urine sample prior to cystoscopy. Urine cytology and NMP22[®] Test Kit analysis (MatriTech, Inc.) was performed on the samples. Cytology results were considered 'malignant' (malignant, dysplastic, atypia, suspicious) or 'non-malignant' (negative and reactive). A positive outcome is a cystoscopy which is a biopsy confirmed malignancy. A negative outcome is a negative cystoscopy, no tumor seen, or a positive cystoscopy in which the biopsy report indicated no malignancy.

RESULTS: There were 25 positive outcomes and 328 negative outcomes.

Test	Sensitivity	Specificity	Negative Predictive Value
NMP22	88% (22/25)	70% (231/328)	99% (231/234)
Cytology	54% (13/24)	90% (290/322)	96% (290/301)
Two tests	100% (25/25)	63% (204/322)	100% (204/204)
	Any one test positive	Both tests negative	

*There were 7 samples which did not have a cytology result.

CONCLUSIONS: Using a reference value of 6.0 U/mL and a cytology report in which all results of atypical, suspicious, dysplastic and malignant are considered positive, all tumors were detected. Our data suggest that patients with NMP22 levels > 6.0U/mL or a positive cytology may be candidates for immediate cystoscopic examination. Conversely, it may be appropriate to place patients with NMP22 levels ≤ 6.0 U/mL and a cytology result of 'non-malignant' on a less aggressive diagnostic protocol. Such changes could have significant implications for decreasing the number of people who undergo cystoscopy or IVP.