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Voided urinary cytology in bladder cancer: is it time to review the indications?

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OBJECTIVES: The sensitivity of voided urinary cytology has been reported as very low. In this study, we investigated the sensitivity and clinical utility of voided urinary cytology in the detection of various grades and stages of transitional cell carcinoma (TCC) of the bladder compared with the urinary nuclear matrix protein-22 (NMP-22) qualitative assay. **METHODS:** From March 2004 to April 2006, all patients with TCC of the bladder receiving follow-up care and those presenting with gross hematuria were enrolled in this prospective study. These patients underwent urinary cytologic examination and NMP-22 qualitative assay. The diagnosis, determined from the cystoscopy findings and biopsy findings of the suspicious lesion, was accepted as the reference standard.

RESULTS: A total of 196 patients were enrolled in this study, of whom 127 patients had previously been diagnosed with bladder TCC and 69 were presenting for investigation of gross hematuria. A total of 52 cases of bladder TCC were diagnosed. The overall sensitivity of voided urine cytology and NMP-22 assay was 21.1% and 67.3%, respectively ($P < 0.001$). The sensitivity of urinary cytology and urinary NMP-22 for well-differentiated tumors was 9.5% and 52.4%, respectively, and was 18.1% and 77.3%, respectively ($P < 0.001$), in moderately differentiated tumors. The overall specificity of urinary cytology for TCC of the bladder was 98.6% and was greater than the specificity of NMP-22 (80.5%).

CONCLUSIONS: The results of our study suggest that urinary cytology has a very low sensitivity and can be omitted in favor of NMP-22 in the follow-up of low-grade superficial bladder TCC.

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