

ROLE OF NMP-22 AS A NOVEL TUMOR MARKER FOR EARLY DETECTION AND MONITORING TREATMENT OF BLADDER CANCER.

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OBJECTIVE: The NMP-22 test kit (Matritech, Newton, MA) is a quantitative, non-invasive test for in vitro diagnostic measurement of urinary NMP. The purpose of our study was to detect the role of nuclear matrix protein (NMP-22) in early diagnosis of bladder cancer and in monitoring treatment of bladder cancer.

METHODS: Urine from 186 patients who presented to The Cleveland Clinic's Urology department with symptoms of hematuria, frequency, dysuria, etc. were tested for NMP-22. The antibodies contained within NMP-22 assay recognize the head and rod domain of nuclear mitotic apparatus protein has been shown to be present in malignant tissues at levels more than ten times higher than in normal tissues.

RESULTS: In the incident cases, 119 of the 143 patients had NMP value of <10 U/mL and none had a positive cytology. In these 119 cases 93 had cystoscopic confirmation of no cancer. There were 24 cases in the incident group with NMP value of >10 U/mL. One of the 24 had a positive cytology and cancer was present on cystoscopic examination. 17 of the 23 patients had a negative cytology and 12 had cystoscopic identification of cancer. Six of the 23 patients had atypical cytology, with 4 having cystoscopic confirmation of cancer. In the prevalent group, 34 of the 44 cases had an NMP value of <10 U/mL. In this group only 2 patients had a positive cytology, with cystoscopic confirmation of cancer in one. Of the 34 cases 14 had an atypical cytology with cystoscopic confirmation of cancer in 2 cases. Ten patients in the prevalent group had NMP value of >10 U/mL. Out of these 10 cases 3 had a positive cytology, and 2 had cystoscopic evidence of cancer. Four of these 10 patients had a negative cytology, and in 2 cases cancer was confirmed cystoscopically. Of these 10 patients 3 had atypical cytologies, and cancer was seen in 2 cases.

CONCLUSIONS: Thus far, in the incident cases, we have not found a false negative patient. Overall, the sensitivity of NMP-22 in the incident is 100% (17/17). Cytology in this same population has a sensitivity of 6% (1/17) or 41% (7/17), if an atypical cytology is considered positive. The evolution to a muscle invasive tumor evolves predictably from a superficial tumor at some point. Our present modalities of detecting the early stage superficial cancer presently include a urinalysis with microscopic hematuria, or a positive urinary cytology. Unfortunately, these two tests often become positive at a later stage and are not sensitive enough to detect the early tumor. An area of obvious interest is the early detection of superficial bladder cancer before it evolves into a muscle invasive cancer. We feel the use of NMP-22 can achieve this purpose and is an exciting new development in the early detection of bladder cancer.