Introduction

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Bladder cancer is considered the fourth highest new cancer diagnosis in men in the United States *(Ramakumar et al., 1999)*. In Egypt the urinary bladder cancer represents a high incidence of 26.4% of total malignant tumors *(Mokhtar, 1991)*.

While transitional cell carcinoma is the predominating histopathologic type of cancer bladder in western countries *(El-Bolkainy, 2000)*, squamous cell carcinoma is the most common type in Egypt representing an incidence of 58.4% of all bladder tumors *(Mokhtar, 1991)*.

However, the decline in the prevalence of bilharziasis in Egypt during the past decade was associated with significant changes in the pathology of bladder carcinoma with a decline in the relative frequency of squamous cell carcinoma and an increase in transitional cell carcinoma *(El-Bolkainy, 2000)*.

Early diagnosis of bladder cancer allows for effective local treatment and optimizes the success of surgical therapy. In the majority of patients, successful treatment of superficial bladder cancer can be accomplished with minimally invasive procedures such as transurethral resection or fulguration, precluding the need for more aggressive surgical therapy *(Carpinito et al., 1996)*.

Survival rate reflects the importance of early diagnosis. Detected at the superficial stage, the 5-year survival rate for patients ranges from 82% to 95%, while corresponding survival rates for those with muscle invasive or metastatic disease are 50% and 6% respectively *(Carpinito et al., 1996)*.

Bladder tumors are classically diagnosed by cystoscopy. This procedure presents the highest valuable standard for detection and monitoring *(Burchardt et al., 2000)*. But while cystoscopy is sensitive in detecting disease, it is an invasive and expensive procedure *(Soloway et al., 1996)*.

Although urinary cytology is a long established non – invasive and very effective in diagnosing high grade lesions, but it has a sensitivity of only 11 to 17% in grade I tumors, which are the most common type of urothelial cell carcinoma (UCC) *(Wiener et al., 1998)*.

The limitations of cytology and cystoscopy, both for primary diagnosis and monitoring of patients after UCC has been removed, led to the development of new urinary bound tests for the early detection of UCC *(Soloway et al., 1996)*. Among these, there are nuclear matrix protein22 (NMP22) which has recently being approved by the Food and Drug Administration (FDA) for bladder cancer evaluation and urinary bladder cancer antigen (UBC) which measures urinary fragments of cytokeratins 8/18 *(Sanchez-Carbayo et al., 2001)*.

Nuclear matrix proteins make up the non-chromatin structure that confers nuclear shape, organizes the chromatin and regulates critical aspects of mitosis. Certain nuclear matrix proteins have been identified as cancer specific markers in human cancer of the colon, breast, bone and NMP22 has been recognized as a potential urothelial – specific cancer marker *(Soloway et al., 1996)*.

Cytokeratins are intermediate cytoplasmic filaments expressed by all epithelial cells and are altered during epithelial differentiation. More than 20 different human cytokeratins have been identified and several cytokeratin expression patterns have been described as tissue specific. Urinary bladder cancer antigen test (UBC) is an enzyme linked immunoassay that determines the levels of cytokeratins 8 and 18 urinary fragments *(Giannopoulos et al., 2001)*.