MANAGEMENT OF SUPERFICIAL BLADDER TUMORS

Essay submitted for partial fulfillment of M.Sc in urology

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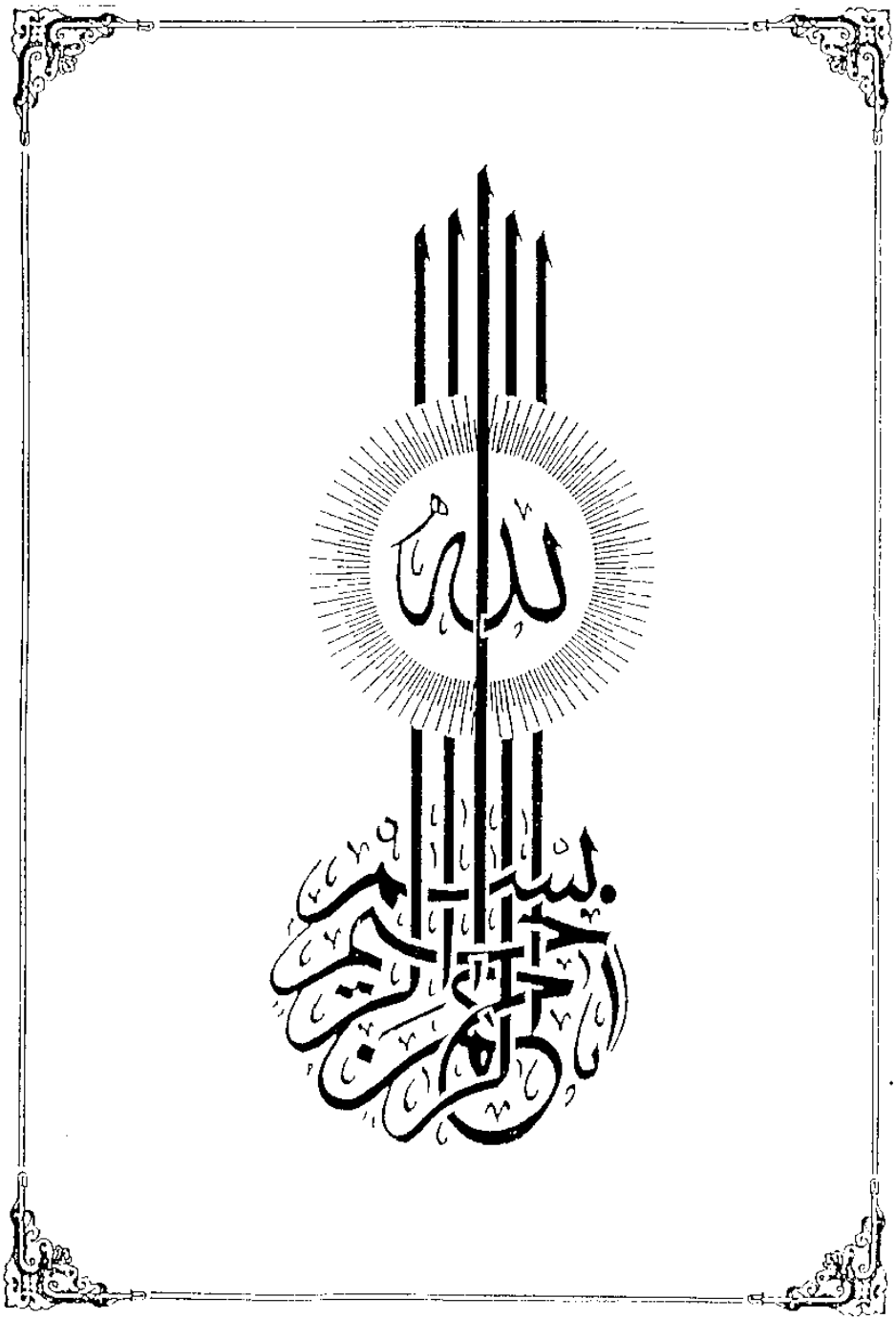

ACKNOWLEDGEMENT

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INTRODUCTION

The management of patients with superficial bladder cancer involves a number of important tasks: 1) the initial tumor or tumors must be removed, 2) the other parts of the urothelium must be assessed for the presence of premalignant or malignant abnormalities (biopsy or cytology), 3) the depth and extent of invasion, i.e. tumor stage, must be determined, 4) the clinician must decide whether additional treatment; e.g. intravesical chemotherapy or immunotherapy, cystectomy, or radiotherapy; is indicated, and 5) the patient must be monitored for the development of subsequent tumors.[4] The mainstay of treatment for superficial disease is transurethral resection of the lesion or lesions. Monitoring of superficial bladder cancer patients after definitive treatment should continue for lifetime of the patient.[3]

In general, there is a marked male preponderance of bladder cancer, not only transitional cell carcinoma, but also squamous cell carcinoma and adenocarcinoma. Bladder cancer is two to five times more frequent in men than in women, a difference that is not entirely explained by difference in exposure to different aetiological factors. In the United States, there is a higher rate of bladder cancer in the white population than in the african-american population.[5]

The incidence of bladder cancer increases with age and is particularly high after the age of 60 years. In fact, the bladder cancer before the age of 40 years is uncommon.[5,6]

The aim of this work is to report and evaluate various diagnostic and therapeutic modalities considering recent advances in the diagnostic and treating tools in order to develop better understanding of the disease.

AETIOLOGY

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Urinary bladder cancer has long been associated with specific etiological factors; cigarette smoking, chemical carcinogens, schistosomiasis, artificial sweeteners, oncogenic viruses and cyclophosphamide. Our information about these factors has significantly increased lately.

1- Cigarette smoking:

For more than 20 years, cigarette smoking has been strongly associated with the development of bladder cancer in epidemiologic studies. Smokers have a four fold higher incidence of bladder cancer as compared with non-smokers.[5] Cigarette smoking may be responsible for approximately 25%-60% of bladder cancer among industrialized, developed countries.[3]

The mechanism by which cigarette smoking produces bladder cancer is not totally defined. It is most likely related to the numerous chemicals in cigarette smoke as polycyclic aromatic hydrocarbons, aromatic amines, and unsaturated aldehydes. They are rapidly metabolized at the site of exposure and are excreted in the urine in metabolically inactive forms which are activated to cause epithelial

irritation ending in metaplasia and then carcinoma.[5]

2- Chemical carcinogens:

In Rehn's report 1895, he described the association of workers with aniline dyes and the occurrence of bladder cancer. The actual carcinogen in Rehn's study turned out to be a breakdown product of the dye, the amine B-naphthylamine. Since then, other epidemiologic and experimental data have identified other chemicals associated with the development of bladder cancer, most of them aromatic amines.[1]

Occupational exposure is believed to be responsible for 15% to 35% of bladder cancer in men and about 1% to 6% of bladder cancer in women.[3]

A latency period has been noted as long as 40 to 50 years [1]. Other aromatic amine to be related to bladder cancer are 2-Naphthyl amine, Benzidine and chlornaphazine [5]. Variations in the risk ratio of these chemicals were suggested to be related to dose ingested and exposure time [3].

3- Schistosomiasis:

Relation between schistosomiasis infestation and cancer bladder was noted by Ferguson in 1911, and since then the subject was thoroughly investigated. A large majority of individuals (approximately 70%) with chronic schistosomiasis who have bladder cancer developed squamous-cell rather than transitional-cell carcinoma [5].

The mechanism by which schistosomiasis produces bladder cancer remains unknown, but two factors appear to be relevant. They are caused by the increased inflammatory and regenerative processes in the bladder of the patients. These processes provide more chance for spontaneous genetic mistakes that ultimately can lead to higher incidence of cancer [7]. The inflammatory process and exposure to environmental agents have the potential to generate substances in the urine, as nitrosamines [5]. Moreover, concomitant chronic foreign body reaction and fibrosis have been postulated to cause lymphatic block and permits accumulation of carcinogens [5,7].

4- Artificial sweeteners:

There has been some suggestion that sodium saccharin and cyclamate, artificial sweeteners, are associated with an increased risk of bladder cancer. They are found to act as promoting factors. An increase in the cell proliferation rate is recognized at the target organs. But the data on this risk factor is still not conclusive [1,5].

5- Oncogenic viruses:

There has been a suggestion of an association of the development of cancer bladder with various viruses, including retroviruses, papilloma viruses, herpes viruses and adenoviruses. Although the association is suggested, still little information and evidences are available [5].

6- Cyclophosphamide:

Patients receiving the treatment for rheumatoid arthritis, cyclophosphamide, have been found to have 3% incidence of bladder tumors. They show nine times higher risk for developing bladder cancer than comparable groups not taking the drug [8].

PATHOLOGY