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DNA PLOIDY AND PROLIFERATIVE ACTIVITY IN PROSTATIC ADENOCARCINOMA

Thesis
Submitted For Partial Fulfillment of Master Degree in Pathology

By

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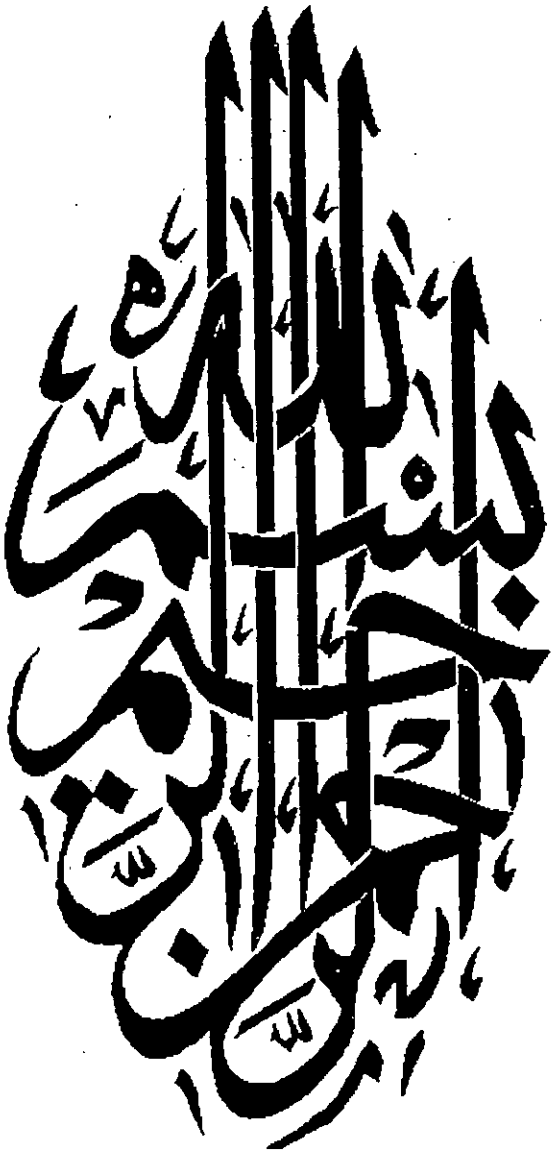
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فى البتولوجيا

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بناء على موافقة الجامعة بتاريخ ٧ / ١٠ / ٢٠٠٧ تم تشكيل لجنة الفحص والمناقشة للرسالة المذكورة أعلاه على النحو التالى :-

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ABSTRACT

The biologic behavior of prostatic adenocarcinoma is influenced by many factors. The proliferative activity of the tumor can be one of these factors, which serve as the basis to estimate prognosis and design treatment. In the present study, DNA content and S-phase fraction (SPF) of prostatic adenocarcinoma specimens obtained from 25 patients were related to other tumor characteristics (grade & stage). Nuclei from paraffin embedded material were isolated and DNA content and SPF were determined using the flow cytometer. Fifty two percent of cases were diploid and 48% were aneuploid. Fifty percent of diploid cases showed low SPF, 25% showed moderate SPF and 25% showed high SPF. On the other hand only 18.2% of aneuploid cases showed low SPF, 18.2%showed moderate SPF and 63.6% showed high SPF. There was a directly proportionate relationship between flow cytometric parameters and histopathologic grade as aneuploid patterns and high SPF were found in high grade more than low grade tumors. No obvious correlation was found between flow cytometric parameters and tumor stage.

Key words: Prostatic adenocarcinoma, DNA content, S-phase fraction, Flow cytometer.

CONTENTS

LIST OF ABBREVIATIONS

BPH: Benign prostatic hyperplasia.

CV: Coefficient of variation.

DI: DNA index.

FCM: Flow cytometry.

FSC: Forward-angle scatter.

PAP: Prostate specific acid phosphatase.

PSA: Prostate specific antigen.

SPF: S-phase fraction.

SSC: Side scatter.

INTRODUCTION & AIM OF THE WORK

INTRODUCTION

Carcinoma of prostate is one of the common forms of cancer in males. It represents 10.6% of cancer affecting males as estimated by WHO. In Egypt it represents 5.5% of cancer affecting males (El-Bolkainy, 2000).

Cancer prostate may have a variable biologic behavior ranging from an indolent course with long disease-free survival to an aggressive clinical course with rapid disease progression culminating in patients' death. Most prostatic carcinomas are of intermediate histopathologic grade and although most of these carcinomas are morphologically similar, this subset of patients may have markedly different clinical courses (Lieber et al., 1995).

Due to this unpredictable natural history of cancer prostate and the subjective nature of histopathologic grading, more objective methods are required for prediction of prognosis especially if they could be applied to biopsy samples (Keren et al., 1994).

Flow cytometry (FCM) allows quantitative DNA ploidy analysis at the single cell level in a rapid and accurate way.It also provides calculation of the percentage of cells in the S-phase fraction of the cell cycle that represents the proliferative potential of the tested cell population (Bauer et al., 1993).

Analysis of cellular DNA content in solid tumors by FCM has been increasingly applied and it has been valuable in predicting clinical behavior of the tumors (Camplejohn, 1993).

AIM OF THE WORK

1-Flow cytometric analysis of nuclear DNA content and calculation of S-phase fraction in prostatic adenocarcinoma.

2-Assessment of correlation between these flow cytometric parameters and histopathologic features of this tumor.