INTRODUCTION

The overwhelming majority of thyroid neoplasms (95%) are primary and epithelial in origin. The primary epithelial thyroid tumors can be divided according to the pattern of growth and cellular differentiation into two major groups including those exhibiting evidence of follicular differentiation which are greatly predominate, those exhibiting evidence of C-cell differentiation, and rare mixed variants ***(Devita et al., 1997)***.

In Egypt, thyroid carcinomas represent 90.5% of all endocrine malignancies and constitute one of the most common cancers in children especially with previous radiation exposure ***(El-Bolkainy, 2000)***.

Malignant transformation in tumors is associated with deregulation of several mechanisms mainly the retinoblastoma (pRb/E2F) pathway which leads both to increase disruption of normal control of G1-S transition phase of the cell cycle, as well as apoptotic cell death ***(Muller et al., 1997)***.

A number of cell cycle associated regulatory proteins have been identified that play important role in development and progression of tumors mainly Cyclin A, B, D, E, G. Cyclin D1 controls progression of the cell cycle at the G1-S transition phase through forming complexes with cyclin dependent kinases (cdK) that phosphorylate retinoblastoma (Rb) protein rendering it inactive and hence progression of the cell cycle can occur ***(Donellan and Chetty, 1998)***.

Apoptosis or programmed cell death is inactive process of self destruction that described long time ago. However, the understanding of the molecular pathways that regulate apoptosis is not fully understood. Proteins encoded by bcl-2 family genes (bcl-x, bcl-2, and bax) are important regulators for apoptosis. Alteration in the expression of these genes can contribute to the origin of cancer, as well as adversely influences tumor responses to chemotherapy and radiotherapy ***(Mokhtar, 1998)***.

Loss of the adhesive function and gain of new adhesive functions is thought to play a crucial part in the interactions between tumor cells and extracellular matrix. Subsequently, affecting metastatic cascade in epithelial neoplasms. CD44 is a transmembrane glycoprotein molecule that is normally expressed in many tissues and is involved in cell to cell and cell to matrix interactions. Current evidence suggests that CD44 proteins participate in a large number of related molecular processes, which involve the cell adhesion and migration. So, it is involved in tumor metastasis and related to poor prognosis in many tumors such as colorectal cancers ***(Ioachin et al., 1999 & Macdonald et al., 2000)***.

Behavior of thyroid carcinomas shows great variation from extremely indolent and highly curable papillary carcinoma to a rapidly progressive and inexorably fatal anaplastic carcinoma with a close relation between the morphological features and behavior of the tumor ***(Moore et al., 1998 & Dean and Hay, 2000)***. Moreover, the significance of several clinical variables that were previously examined on patient's survival such as age, sex, tumor

type, lymph node metastases and distant metastases had prognostic significance but were not all independent variables ***(Dean and Hay, 2000)***. Because of this great discrepancy in biology and behavior of thyroid tumors, assessment of the role of cell cycle regulatory protein Cyclin D1, apoptosis regulatory protein Bcl-x and the cellular adhesion molecule CD44 may provide better prognostic parameters for thyroid neoplasms.