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A BIOCHEMICAL STUDY OF A ROLE OF FIBROBLAST GROWTH FACTOR (FGF-2) IN IRAQI BLADDER CANCER PATIENTS

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ABSTRACT : To evaluate the level of Fibroblast Growth Factor-2 in the serum of Iraqi bladder cancer patients, eighty Iraqi subjects were enrolled in this revision; 40 with bladder cancer and 40 healthy subjects (as a control group) with age ranged between (45-75) years. Serum level of Fibroblast Growth Factor-2 was measured by enzyme-linked immunosorbent assay (ELISA) technique. The levels of Fibroblast Growth Factor-2 showed significantly increased in bladder cancer patients in comparison with control group (p<0.01).

Key words : Fibroblast Growth Factor 2, bladder cancer.

INTRODUCTION

Bladder tumor is one of the most common tumors worldwide. Bladder tumor incidence in men are more common than women and typically affects old age subjects, yet it can happen at any age (Shahrokh F. Shariate *et al*, 2009).

Urothelial carcinoma, Squamous cell carcinoma, Adenocarcinoma is the main type of bladder tumor. But one of the most common types of bladder tumor is the urothelial tumor also known as the Transitional Cell Carcinoma, in this case the tumor stars in the cells in the bladder's internal lining. Stages of bladder cancer depend on the degree of tumor attack within the bladder wall (Michael Schulster, 2019).

Bladder tumor is the 9th most common form of cancer in the world, though globally ranking 7th in men.Even bladder cancer diagnose at early stage it may recur in the bladder. For this reason, subjects have bladder cancer needed follow-up tests for several years to look for returns or spreads of the disease (Witjes Chair *et al*, 2018).

Patients with Bladder cancer may have hematuria, aching with urination, Pelvic pain, Back pain and recurrent urination but, these sign and symptoms may occur as a result of disease other than bladder cancer (Marcus G K Cumberbatch *et al*, 2019). Smoking, contact with chemicals compound, previous exposure to radiation, irritation in the lining of the bladder and parasitic infections may contribute as the main reason of bladder cancer (Lotan, 2017).

One member of a family of cell signaling proteins is fibroblast growth factors (FGF) that have basic role in different process, especially in normal development. Dysfunction of FGF lead to disturbance in the development. Fibroblast growth factor stimulates cell surface receptors by acting as extracellular molecules that circulate systemically or locally (Keiji Inoue *et al*, 2000). FGFs are capable of binding to heparin and heparan sulfate and sequestered in the extracellular matrix of tissues containing proteoglycans of heparan sulfate, allowing FGFs released locally after damage or tissue transformation (Darren C Tomlinson *et al*, 2009).

Basic growth factor for fibroblasts (bFGF) and FGF-β is another name of FGF2, which functions as growth factor and signaling protein encoded by the gene FGF2. 155 Polypeptide amino acid is synthesized and 18 kDa proteins are produced (Chaffer, 2006).

The four start codons that supply N-terminal extensions of 41, 46, 55, or 133 amino acids, resulting in 22 kDa (196 aa total), 22.5 kDa (201 a total), 24 kDa (210 aa total) and 34 kDa (288 aa total) proteins, respectively. InGeneral, the 155 aa/18 kDa low molecular weight (LMW) form is present in the cytoplasm and can be secreted from the cell, whereas the high molecular weight (HMW) forms are release to thenucleus of the cells (Erica di Martino, 2012). bFGF have wide mitogenic