

Detection of IL-6 Sera Concentration in patients with Bladder Carcinoma at Thi-Qar Province

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Abstract :

The study design to measure IL-6 sera concentration in sample of patients at Thi-Qar university suffering from bladder carcinoma and compared with healthy subjects . The study included 78 subjects divided in two groups the first group 48 patients with bladder carcinoma(BC) and other groups represented 30 healthy subjects . Enzyme Linked Immunosorbent Assay was used to detect sera IL-6 levels of patients and healthy control . The results marked increased in concentration levels of IL-6 in patients comparison to healthy group with high significant difference (132.68 & 22.84 , $p=0.001$, respectively) . Also , there was highly significant difference among stages of patients $p=0.001$, $f= 32.934$.

Key Words : IL-6 , Bladder cancer , Sera concentration

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الخلاصة :

صممت الدراسة لقياس تركيز المصل المحرك الخلوي IL-6 في عينة من المرضى في محافظة ذي قار الذين يعانون من سرطان المثانة ومقارنتها مع الاشخاص الأصحاء. وشملت الدراسة 78 شخص مقسمة إلى مجموعتين المجموعة الأولى 48 مريضاً مع سرطان المثانة ومجموعة أخرى تمثل 30 شخصاً أصحاء. تم استخدام فحص الإنزيم المرتبط المناعي الاليزا للكشف عن مستويات المدور الخلوي 6 في المرضى وعينات السيطرة من الأصحاء. أظهرت النتائج زيادة في مستويات تركيز المدور الخلوي 6 في مرضى السرطان مقارنة مع الأشخاص الأصحاء في مجموعة السيطرة مع اختلاف معنوي كبير (132.68 و 22.84، $p = 0.001$ ، على التوالي). كما أظهرت النتائج ان هناك فرق معنوي كبير جدا بين مراحل المرضى $f, p = 0.001$ و 32.934.

Introduction :

Interleukin-6 IL-6 considers an inflammatory cytokine that has multifunctional effect [1] . It involves in pathogenesis and prognosis of malignancies . It helps tumor to grow via enhancement angiogenesis processing and inhibiting apoptosis of cancer cells [2]. The growth of solid tumor can be regulated in paracrine and autocrine ways by helping IL-6 [2].

Interleukin-6 contributes to the proliferation of colorectal cancer cells and other cancers, especially those at the advanced stage of development [3]. Interleukin-6 concentrations can depend on the tumor stage and can correlate with survival.

IL-6 considered as a prognostic factor for many types of cancer by previous investigations . Serum IL-6 concentrations was elevated in patients with endometriale carcinoma [4], lung cancer [5], colorectal malignant [6], renal cell carcinoma [7], cancer of breast [2] and ovarian malignancy tumors [8].

The concentrations levels of serum IL-6 , CRP and TNF- α were elevated in colorectal cancer patients in comparison with the control group ,also its serum concentrations were associated with the tumor size and shorter survival [9]. The role of IL-6 as a prognostic factor was also confirmed by other studies .

A correlation between colorectal cancer stage and serum IL-6 concentrations indicated by Esfandi et al. [10] , also he was found correlation with the presence of IL-6 in colorectal cancer cells . From each of the important role of protein 6 in the development of many cancers we conducted this study to measure its concentration and role in patients with bladder cancer in our city

Material and Methods

The study included 78 subjects (54 male and 24 female with a range of 29 to 81 years) . Patients under suspicion for bladder cancer who were to undergo cystoscopy over the period of study from March -2015 to December -2016 were eligible for this study. They were diagnosed clinically by consultant urologists at Al-Hussein teaching Hospital , and based on a clinical evaluation and a histopathological examination . Forty –eight bladder carcinoma patients with 30 healthy subjects were classified into two groups :

Group 1 : 48 Urinary bladder carcinoma(UBC) patients (36 males and 12 females with a range of 29 to 81 years).

Group 2 : 30 healthy subjects ,(18 males and 12 females with a range of 32 to 69 years), were obtained as a control group .

Through direct interview with the patient and healthy subject the personality information for each one was collected, and the histopathological report included : morphology, histopathological type of the tumor, muscle invasion, that were obtained from the hospital records of the patients forma .

Serum IL-6 was quantitatively determined in sera of patients and healthy control subjects by means of ELISA (Enzyme Linked Immunosorbent Assay) using ready kits supplied by USBiological company .

Results and Discussion

patients with bladder carcinoma showed an elevated mean serum level of IL-6 (132.68) , as compared with the healthy control (22.84 pg/ml), there was a highly significant($p < 0.01$) difference between patients and healthy control (Figure 1) .

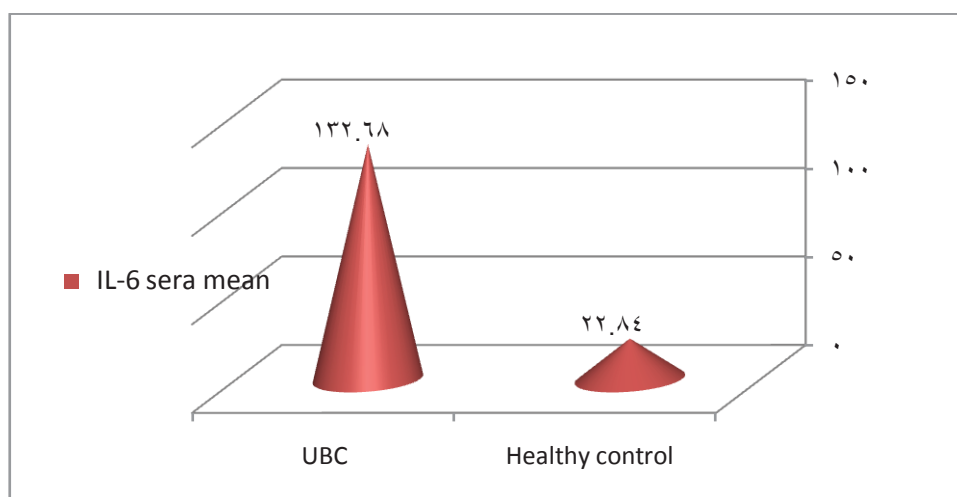


Figure (1): Sera concentration of IL-6 in patients and healthy control

The results of this study was compatible with the results of Mousa (2013) who found there was an elevated serum mean levels of IL-6 in sera of bladder cancer patients when compared with benign and healthy subjects in Iraq [11] , and Chen *et al.*(2013) who reported that IL-6 was over expressed in the bladder cancer specimens compared with non-malignant tissues at both mRNA and protein levels [12] .

It has been previously suggested that IL-6 plays a significant role in bladder carcinoma by the ability to synthesize endogenous IL-6 that can markedly accelerates the growth rate of weakly

tumorigenic urothelial cells, but is not sufficient to induce a tumorigenic phenotypes in non-tumorigenic cells [13].

The relationship between sera mean levels of IL-6 and the size of tumor or stages of cancer in patients with bladder cancer showed that the highest IL-6 mean levels were observed in sera of bladder cancer patients with T2(180.22 pg/ml), then in sera of bladder cancer patients with T3(140.48pg/ml), and then T1(74. 84 pg/ml) show (Table 1).

Table(1): Sera concentration of IL-6 in tumor stages of patients

Stages	Number	Mean \pm S.E .of IL-6 pg/ml	Sig. between groups	P value
T1*	16	74. 84 \pm 4.19	T1-T2	0.001
T2**	17	180.22 \pm 11.37	T1-T3	0.001
T3***	15	140.48 \pm 10.7	T2-T3	0.005

* T1: Patients with cancer tumor reach to the lamina propria .

**T2 : Patients with cancer tumor invasive to the muscle wall .

***T3 : Patients with cancer tumor distant metastases .

The results showed a significant difference in sera IL-6 mean levels bladder cancer patients with T2 and T1 (180. 22 pg/ml, 74. 84 pg/ml , respectively P=0.001) and highly significant difference in sera IL-6 levels between T1 and T3 (74.84 pg/ml , 140.48 pg/ml , respectively P= 0.001) and also statistically significant difference in sera IL-6 levels between T2 and T3 (180.22, 140.48 pg/ml , respectively P= 0.005) . Chung *et al.*(2006) found that more patients with advanced-stage disease had a significantly high tumor expression of IL-6 [14] . Additionally, vascular invasion correlated with tumor overexpression of IL-6. Overexpression of IL-6 in tumor also correlated with poor survival.

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