



The IHC Expression of IL-13 in Bladder Tumour

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Abstract : The study designed to detect IL-13 expression in bladder tumor tissues , and to clarify the relationship between its expression and clinicopathological grade of bladder cancer . The expression of IL-13 in tumor cells was investigated in (50) patients with urinary bladder carcinoma (UBC) of different grades (G) and (15) patients with urinary bladder diseases benign tumor (UBD) from three Hospitals in Baghdad Province . The tissue sections were analyzed immunohistochemically (IHC) to detection of IL-13 . The results showed a high positive immunohistochemical IL-13 expression of UBC tissues than in UBD tissues (86 % versus 26.7% ; $p \leq 0.01$) . Also ,the high grade of UBC patients was significantly associated with IHC expression of IL-13 ($p \leq 0.01$). We concluded the higher expression of IL-13 in the bladder cancer patients suggests that is involved in progression of tumour.

Introduction

Interleukin-13 (IL-13) is an immunoregulatory cytokine which plays an important role in carcinogenesis through affecting tumor immunosurveillance . It was originally described as a T cell-derived cytokine that inhibits inflammatory cytokine production secreted from immune cells [1]. Though this original description remains accurate, the known functions of IL-13 have expanded over the past few years. In cancer, IL-13 inhibits CD8+ CTL-mediated tumor immunosurveillance [2] and contributes to tumor escape from apoptosis and growth arrest [3]. A

recent case-control study demonstrated a highly significant difference in mRNA and protein expression of IL-13 between patients with bladder cancer and controls [4]. In relation to bladder cancer, there is no publications dealing with IL-13 in Iraq . So the aim of this study was to evaluate the expression of IL-13 protein in bladder tumor and whether the expression of IL-13 is correlated with clinical features in patients with UBC.

Materials and Methods

Fifty patients with urinary bladder carcinoma (UBC) and 15 patient with (UBD) , were included in this study, the patient samples were collected from some Hospitals in Baghdad . The sections were put on positive charged slides and stained immunohistochemically for IL-13. Immunohistochemical staining was carried out using Avidin-Biotin complex technique using non-commercial material , the slides were

deparaffinized, rehydrated then blocked. All of the slides were treated with Mouse antihuman IL13 primary antibody, dilution 1:50 (Dako, Denemark). After washing, the samples were stained with diluted liquid DAB, and then counter stained with hematoxylin . Slides washed , dehydrated then mounting, and examining under light microscope at 10X ,20X,40X magnification .

Results & Discussion :

The Positive expression of IL-13 was observed in (86 %) of UBC patients, while it was lower (26.7%) in UBD patients with high statistical difference $p \leq 0.01$ (Table 1, Figure 1) .These results are compatible with MalekZadeh *et al.* [4] who found overexpression of IL-13 as a potent

immunosuppressive cytokine in patients with bladder cancer ,and with Srabovic *et al.* who found that IL-13 expression was significantly higher in breast cancer tumour compared with breast tissue in patients with benign breast diseases ($P \leq 0.01$) [5].

Table (1): IL-13 expression in bladder patients groups.

Study groups		IL-13 EXPRESSION		Total	P-value χ^2 -value
		positive	negative		
UBC	No	43	7	50	0.0027 9.181**
	Percentage%	86	14	100	
UBD	No	4	11	15	
	Percentage%	26.7	73.3	100	
Total	No	47	18	65	
	Percentage%	72.3	27.7	100	

** (P<0.01).high significant

In terms of scores, UBC patients with the score ++ represented the highest frequency (39.53%). While, the scores 10 % ≤ scattered , + showed equal frequent IHC score in UBD (50%) . However, the (Table 2) showed the frequency distribution of IL-13 overexpression scores in groups subjects . Chi-Square test showed that there was a significant difference (p≤0.05) between urinary bladder

carcinoma and other urinary bladder disorders for IL-13 IHC scores in tissue sample taken from each case . Regarding the tumor grade of UBC , IL-13 was detected in 12 out of 18 of grade-1, 18 out of 19 of grade-2, and 13 out of 13 of grade-3. There was a high significant association between the grade of UBC and the immunohistochemical expression of IL-13 , (p ≤ 0.01)

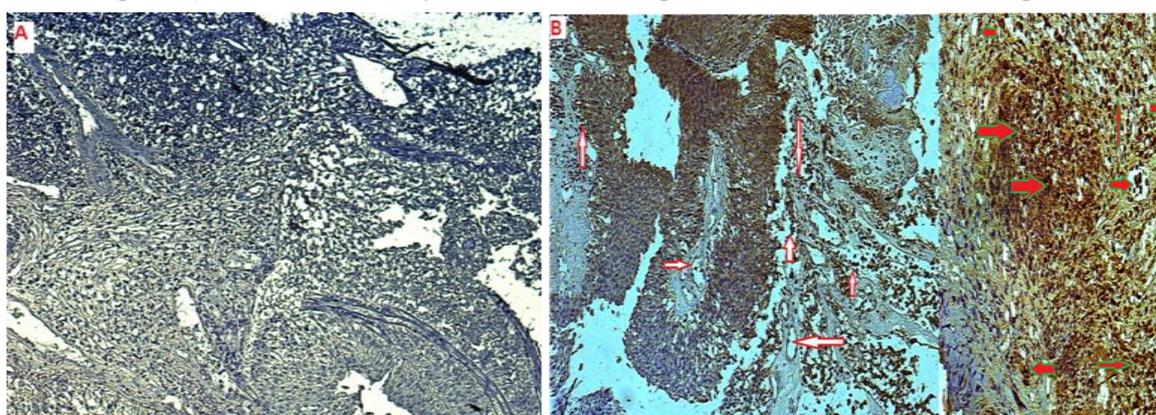


Figure (1):A: Invasive transitional cell carcinoma , poorly differential(Grade II) showing no detectible IL-13 immunostaining (score 0 negative)(10X), B: Immunohistochemical tissue expression of IL-13 in bladder tumor tissues showing positive IL-13 immunostaining (score +++ brown) (arrow) (10, 20X) .

Table(2): Frequency of IL-13 IHC scores in patients groups.

IL-13 Score	UBC		UBD		Total	
	No.	%	No.	%	No.	%
+++	14	32.56	0	0	14	29.8
++	17	39.53	0	0	17	36.2
+	9	20.93	2	50	11	23.4
Scatter ≤ 10	3	6.98	2	50	5	10.6
Total	43	91.5	4	8.5	47	100
P-value	---	0.013	---	0.0022	---	0.014
χ^2 -value		7.208 **		10.00 **		7.015 **

** (P≤ 0.01).high significant



The majority of high grade tumor cases showed positive immunohistochemical IL-13 expression 31(96.9%), while only 12 cases (66.7%) of low grade tumor showed positive immunohistochemical IL-13 expression (Table 3). These results agree with Srabovic *et al.* who found that IL-13 expression was significantly correlated with size of tumor in breast cancer [5].

response to molecules secreted by the cancer cells or by the cancer cells, themselves [6]. The role of IL-13 has been demonstrated to be prominent in malignancy. High levels of IL-13 provoke reduced tumor immunosurveillance resulting in an uninhibited tumor progression. Neutralizing natural IL-13 has demonstrated a marked increase in the body's ability to fight off cancer cells and tumors [7]. There is an evidence that some cytokines are produced by host stromal cells and immune cells, in

Table (3): Association between IL-13 IHC expression with tumor grade

parameter		IL-13 EXPRESSION		Total	P-value
		positive	negative		χ^2 -value
Grade of UBC	Low grade (G≤ 1)	12(66.7%)	6(33.3%)	18	0.0028 7.993 **
	High grade (G≥ 2)	31(96.9%)	1(3.1%)	32	
	Total	43(86%)	7(14%)	50	

** (P<0.01) high significant

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