KIM-1 VALUES IN URINE OF CLEAR CELL RENAL CARCINOMA PATIENTS ARE ASSOCIATED WITH TUMOR SIZE, TNM STAGE, FUHRMAN GRADUS AND THERAPY RESPONSE

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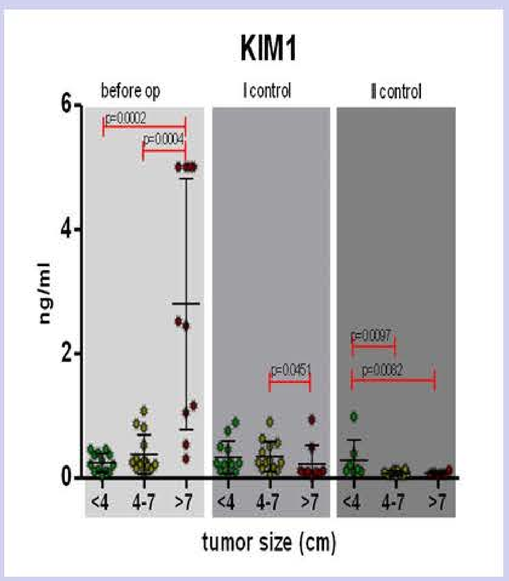
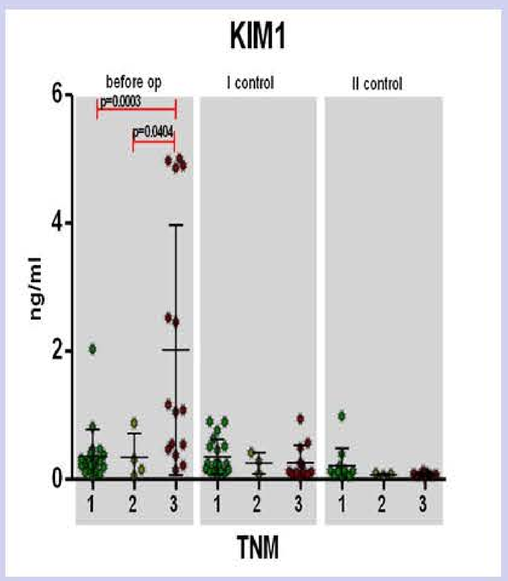
Objectives:

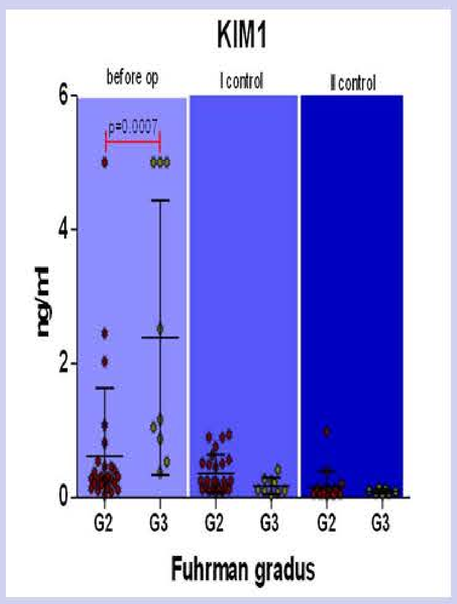
KIM-1 is suggested to play a key role in the carcinogenesis and progression of renal cell carcinoma[1]. KIM-1 staining is upregulated in proximal tubule-derived renal cell carcinoma (RCC) including clear renal cell carcinoma (cRCC)[2]. Attention is currently focused on the potential use of the urinary level of KIM-1(uKIM-1) in making an early diagnosis and determination of the histologic characteristics of renal cell carcinoma[3]. This study was designed to prospectively examine uKIM-1 level before, 7th day and 30th day after removal of cRCC.

Methods:

A total of 39 patients, pts (25 male and 14 female, 37-77 years, median 55) were enrolled in the study based on pre-operative imaging studies and post-operative diagnosis of cRCC. At the time of operation all pts had GFR (CKP-EPI formula) higher than 60 ml/min/1.73 m^2. Urinary KIM-1 (ELISA, TIM-1/KIM-1/HAVCR, R&D Systems Inc, Minneapolis, MN, USA) were measured pre-operative (39 pts) and during follow-up (7th day-36 pts and 30th day-23 pts) after removal of renal tumors.







Tumor size (cm)			TNM			Fuhrman		Control
< 4	4-7	>7	1	2	3	G2	G3	values
0.3±0.2	0.4±0.3	2.4±1.9	0.4±0.4	0.4±0.4	2.1±2.0	0.6±1.0	2.4±2.1	0.2±0.1

Results:

KIM1 concentration was significantly elevated in RCC patients urine samples comparing to healthy controls but not to other non clear cell renal carcinoma patients. KIM1 values were significantly associated with large tumor mass, higher TNM stage and Fuhrman grade, comparing to levels found in samples of patients with smaller tumor mass, and lower TNM stage and Fuhrman grade (p=0.0007, p=0.0001, p=0.0007, respectively). Highest average concentration of KIM-1 in urine samples was before surgery (1.1±0.3 ng/ml). Average concentration of KIM 1 was significantly decreased in both, the first (0.3±0.3, p= 0.0070) and the second control (0.1±0.9, p<0.0000) compared to pre-operative values. Completely nephrectomised patients had continous fall of urinary KIM1, while partial nephrectomy induced even KIM1 increase on first interval control. Anyway, both surgical procedures induced KIM1 reduction to a levels identical in healthy controls.

Conclusions:

Our prospective study showed significant reduction in uKIM-1 after nephrectomy, suggesting that urine KIM-1 may serve as a valuble biomarker for diagnosis of cRCC and therapy monitoring.

References:

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