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Investigation of piR-36707 and piR-36741 expression levels in renal cell (transparent cell type) carcinomas

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Background: Piwi interacting RNA (piRNA) is the main class of small non-coding RNA molecules expressed in animal cells. Some of the piRNAs expression increases and shows oncogenic properties; while on the other hand, some of their expression decreases and shows tumorigenic properties in specific cancer types.

Objective: The present research is in comparison within normal and tumor renal biopsy specimens taken from patients with clear cell renal cell carcinoma (RCC), and in kidney tissue samples of non-transfected RCC patients who were operated for different reasons, two possible piRNAs (piR -36707 and piR-36741) expression levels, which are not related before but probably related to RCC.

Methodology & Theoretical Orientation: Between January 2016 and January 2017, formalin-fixed paraffin embedded (FFPE) specimens were obtained from 19 patients who had undergone partial or radical nephrectomy for diagnostic purposes and who had a clear cell RCC diagnosis in urology and pathology in the Ondokuz Mayıs University, Faculty of Medicine (OMÜTF). Tumor tissue sample and a healthy tissue sample from the same patient were included in the study. FFPE was made from tissue using a total RNA isolation kit. The piRNA-specific cDNA synthesis kit was used to convert the resulting piRNA into cDNA. piR-36707 and piR-36741 expression levels were measured using commercially available primers and real-time PCR kit specific to these piRNAs. Statistical significance analysis of the levels of piRNA expression was performed between the two groups.

Findings: Expression levels of piR-36707 and piR-36741, calculated by the comparative 2-ΔΔCt curve between tumor and normal kidney tissues, are given in comparison in Figure 1. The higher expression levels of piR-36707 and piR-36741 in tumor tissues than normal tissues give them a potential oncogenic function. However, when this relationship was examined by statistical methods, it was seen that p value was above 0.05 for both piRNAs and these changes were not significant.

Conclusion & Significance: According to the literature, this is the first study that relates to clear cell RCC pathogenesis and piR-36707 and piR-36741 genes. Prospectively, all genes in the target of piR-36707 and piR-36741 are studied as panels to achieve universal and comprehensive data for the pathogenesis of clear cell RCC.

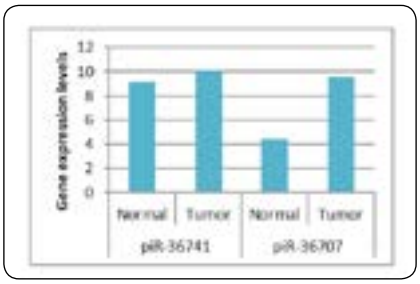

Figure 1: Comparison of expression levels of piR-36741 and piR-36707 between tumor and normal kidney tissues.

Recent Publications:

1. Ciccarese C, et al. (2016) The prospect of precision therapy for renal cell carcinoma. Cancer Treatment Reviews 49:37–44.
2. Parekh H and Rini B I (2016) Emerging therapeutic approaches in renal cell carcinoma. Expert Review of Anticancer Therapy 15(11):1305–14.

3. Yang X, et al. (2015) Detection of stably expressed piRNAs in human blood. International Journal of Clinical and Experimental Medicine 8(8):13353–13358.
4. Siddiqi S and Matushansky I (2012) Piwis and piwi-interacting RNAs in the epigenetics of cancer. Journal of Cellular Biochemistry 113(2):373–80.

Biography

Diler U S Altay is working as Assistant Professor in Ordu University. She completed her primary, secondary and high school education in Ordu. She graduated from the Department of Biochemistry at Ege University, Turkey. After working in the private sector for a short time, she completed her PhD in the Department of Biochemistry at Karadeniz Technical University in 2015 and was appointed as Assistant Professor at Ordu University in January 2016. She is still continuing her studies at Ordu University. She has published articles in three national and 19 international journals. Her work areas include cancer modeling, cachexia, weight loss hormone, oxidant-antioxidant system in animals.

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