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The high expression levels of miRNAs in *BRCA1* related hereditary ovarian cancer

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Statement of the Problem: *BRCA1* and *BRCA2* genes play critical roles in maintaining genome stability and integrity, the cell cycle control and apoptosis. Deficient cells for the genes of DNA repair system due to changes accumulates chromosome anomalies with loss of cell cycle control. Mutations in *BRCA1* represent a predisposing genetic factor in 87% of breast cancer in female and 44% of ovarian cancer. MicroRNAs are about *19–24 nucleotide*-long, *single-stranded, non-coding RNAs* that *regulate* the expression of *target mRNAs* both at *transcriptional* and translational level.Although the microRNA expression in ovarian cancer has been reported in few studies, it is still main unclear the effect on ovarian cancer oncogenesis. In our study, miRNA array analysis was performed in high risk-BRCA mutation carrier ovarian cancer family having discordant monozygotic twins for ovarian cancer and family members.

Methodology: In the study, the lymphocyte cells of peripheral bloods belonging to the family members were 3 sisters, 1 brother, 1 newpew, 1 daugther of patients and the discordancat monozygotic twins for ovarian cancer who applied to cancer genetics clinic at University of Istanbul, Institute of Oncology in 2012 were used. Total RNA and miRNAs were isolated from lymphocytes, respectively. The Agilent miRNA array kit protocol was used to measure expression levels of miRNAs. Multiple tests were used for statistical analysis to detect difference between miRNAs expressions.

Findings: The discordant monozygotic twins for ovarian cancer, 3 sisters, and 1 nephew were mutation carriers of *BRCA1*; one brother and one daughter of patient were non-carrier of *BRCA1*. It was found that the expression levels of 13 microRNAs were high in comparison between ovarian cancer patient and healthy siblings who were mutation carriers. The increased expression levels of miRNAs were miR-1260a, miR-1260b, miR-16-5p, miR-17-5p, miR-18b-5p, miR-26b-5p, miR-4281, miR-6840-3p, miR-7114-5p, miR-7975, miR-7977.

Conclusion & Significance: It was suggested that these miRNAs may be important *BRCA1* related hereditary ovarian cancer. It will be searched within a large kohort in further research.

Biography

I love this work beacuse it keeps me motivated intrinsically which is the utmost necessity for success.Research is an organized method that keeps all scientist dissatisfied with what you have discovered and this dissatisfaction is what drives more and mor discovery. For so many years the question: 'How to cure cancer?', which has gone unanswered drives me so ambitious in order to find the answer. I believe that the work conducted our lab may help cancer patients always improve my motivation.

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