Expression of miRNA and Cancer Stem Cells in the peripheral blood of Egyptian Non-Small Cell Lung Cancer NSCLC patients.

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Abstract

***Background**: Lung cancer stem cells play a major role in lung cancer metastasis, drug resistance and tumor-self-renewal. The miRNA profile of CSCs is remarkably different from non-stem cancer cells. As such, many miRNAs have been shown to regulate self-renewal and differentiation properties of CSCs. Also, MicroRNAs play a significant role in shaping immune response. **Aim**, aim of this study was to analyze the numbers of these cells in non-small cell lung cancer patients (NSCLC) before and after induction of chemotherapy and measure the relative expression of miRNAs. **Materials and Methods:** The frequencies of $CD45^-$, Epcam+ and $CD133^+$ cells as compared to healthy controls were analyzed in the peripheral blood of NSCLC patients before (n= 10) and after (n= 10) chemotherapy using multiparametric flow cytometry. The gene expression of miRNAs in Peripheral Blood was measured using microarray. **Results:** early diagnosed patients before induction of chemotherapy showed high numbers of Epcam+ and $CD133^+$ CSCs when compared to CTRL; where the numbers of these cells were decreased after treatment as compared to CTRL and before treatment. A significant upregulation of miRNAs and downregulation of miRNAs were observed in the PBMCs of NSCLC patients as compared to healthy controls. **Conclusion:** current study opens a new avenue to investigate the mechanism mediating the emergence of these cells on larger number of NSCLC patients at before and after treatment stages. Also, identified potential key molecules and provides a basis for investigations of tumor development as well as novel drug targets for non-small lung cancer treatment.*

***Key words:** Non-small cell lung cancer (NSCLC), Miro-RNA, Cancer stem cells (CSCs), CD133, EPcam.*