

Role of MiRNA in Pulmonary Hypertensive Premature with Bronchopulmonary Dysplasia

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Aim:

Microsomal RNAs' contribution was established in pulmonary hypertension(PH) process by smooth muscle proliferation in pulmonary artery, resistance to apoptosis, endothelial damage and vascular remodeling.

In this study, it was aimed to determine role of miRNAs in pulmonary hypertensive infants with BPD and to investigate whether miRNAs are appropriate markers for risk stratification.

Material method:

The study included 21 BPD patients with PH (group 1), 17 without PH (group 2) and 21 healthy preterm(group 3). All participants were aged between 28 days and 3 months. Echocardiography was performed by using Vivid 7 Ultrasound system (GE, Hortens, Norway). Tricuspid velocity, mean pulmonary artery pressure (PAP), pulmonary acceleration time, RV end diastolic and end systolic diameter, RV Tei, RV FS, TAPSE, IVC index, LV eccentricity index parameters were measured by echocardiography.

For miRNA assays, peripheral blood samples were drawn into EDTA tubes at time of diagnosis and expression of 25 miRNAs were analyzed.

Results:

Mean weight of patients: 1000(850-1340)gr, 1100(832-1345)gr, 1360(1100-1512)gr for Group 1,2,3 respectively. Mean PAP and PVR was found significantly high in group 1. Nineteen types of miRNA were associated to pulmonary hypertension. Expression of the 15 miRNAs of these 19; was found increased in group 1 (miR 23a-3p, miR 23b-3p, miR 21-5p, miR 17-5p, miR 199a-3p, miR 451a, miR 191-5p, mir 206, miR 145-5p, miR 20a-5p, miR 26b-5p, miR 29c-3p, miR 126-3p, miR 130a-3p, miR 208b-3p). It was also found that expression was significantly higher in 3 miRNAs in group 1 when compared to group 3 (miR 221-3p, miR 221-5p, miR 223-3p). miR 150-3p expression level was significantly lower in group 2 than group 3.

Conclusion: Pulmonary hypertension is a disorder developing due to environmental and genetic reasons, in which underlying mechanism isn't fully understood. The genes controlled by miRNAs found to be related to PH in our study may have a mechanistic role in PH. In the future, it could be possible to establish novel approaches that may contribute early diagnosis and treatment of pulmonary hypertension by focusing target genes of miRNA found to be related in this study.