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Pulmonary Hypertension and Venous Thrombo-embolic Disease

PLASMA EXPRESSION OF MIR-21 IS INCREASED IN HIV-INFECTION AND HIV-RELATED PULMONARY ARTERIAL HYPERTENSION

Poster Contributions

Hall C

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Session Title: Pulmonary Hypertension and Pulmonary Thrombo-embolic Disease II

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Background: Pulmonary arterial hypertension (PAH) is a deadly disease more common among the human immunodeficiency virus (HIV)-infected population, however the molecular underpinnings of this increased prevalence remain poorly understood. Circulating miRNAs may be instrumental in identifying specific miRNAs as pathologic actors and longitudinal markers of disease. MiRNA-21 (miR-21) has been implicated in PAH pathology and may represent a molecular agent in the pathology of HIV-related PAH. We hypothesize that the plasma expression of miR-21 is altered in HIV and HIV-related PAH, implicating this miRNA as a molecular contributor in HIV-related PAH.

Methods: Subjects were recruited from San Francisco General Hospital and Massachusetts General Hospital. HIV-infected patients were screened for PAH with echocardiography and mean pulmonary artery pressure was confirmed with right heart catheterization. Circulating miRNA expression was measured using quantitative real-time polymerase chain reaction (qRT-PCR).

Results: 39 HIV-related PAH patients (median age 46, 79% male, average mean pulmonary artery pressure 43mmHg), 18 HIV-infected patients without PAH recruited from San Francisco General Hospital (median age 51, 72% male, 83% exposed to antiretroviral therapy), and 16 uninfected individuals (median age 49, 63% male) were included in this study. Using qRT-PCR, circulating miR-21 expression is significantly increased both in the plasma of HIV-infected patients and those with HIV-related PAH compared to uninfected individuals (uninfected mean RQ=1.44±0.50 (mean±SEM), HIV mean RQ=9.02±3.00, HIV-related PAH mean RQ=5.85±0.94. $p=0.03$ for HIV vs. uninfected and $p=0.006$ for HIV-related PAH vs. uninfected). However, there is no significant difference in plasma miR-21 expression between HIV-infected patients and HIV-related PAH patients.

Conclusions: MiR-21 expression is increased in the plasma of individuals with HIV and HIV-related PAH. Given its known importance in pulmonary hypertension, dysregulation of miR-21 may represent an important contributor to the pathogenesis of PAH induced by HIV infection.