Abstract: P163

Plasma ADAMTS13 activity in chronic thromboembolic pulmonary hypertension

Authors:
A Panzenboeck¹, R Sadushi-Kolici¹, B Plaimauer², H Gritsch², PL Turecek², I Lang¹, ¹Medical University of Vienna, Department of Internal Medicine II, Division of Cardiology - Vienna - Austria, ²Baxalta Innovations GmbH, now part of Shire - Vienna - Austria,

Topic(s):
Platelets, Haemostasis, Coagulation

Citation:
Cardiovascular Research (2018) 114 (Supplement 1), S43

Background: Deficiency of ADAMTS13 activity leads to von Willebrand factor giant multimers with high affinity for platelets and high thrombotic risk. Because elevated levels of vWF are associated with thrombosis, we tested the hypothesis that ADAMTS13 activity is involved in major vessel thrombosis of pulmonary hypertension. Therefore, we determined ADAMTS13 activity in non-thromboembolic pulmonary arterial hypertension (PAH), and in chronic thromboembolic pulmonary hypertension (CTEPH).

Methods: ADAMTS13 activity was measured in a kinetic assay using the fluorescence resonance energy transfer substrate VWF 73, and ADAMTS13 concentration was measured in an enzyme-linked immunosorbent assay. Plasma samples of 89 patients (mean age 55±14 years) were obtained at time of diagnosis.

Results: Of 89 patients (female 63%), 45 patients (51%) were diagnosed with CTEPH, 36 patients (40%) with PAH [18 patients with idiopathic PAH, hereditary PAH and PAH associated with drug/toxins; 10 patients with PAH associated with connective tissue disease (CTD); 4 patients with portopulmonary PAH, 4 patients with PAH associated with congenital heart disease (CHD)], and 8 (9%) patients with pulmonary hypertension (PH) due to lung disease and/or hypoxia.

ADAMTS13 activity and concentration correlated significantly (rho=0.78, P<0.001). ADAMTS13 activity and concentration showed no significant difference between patients with CTEPH (0.97±0.26U/mL; 0.59±0.17µg/mL), PAH (0.98±0.29U/mL; 0.58±0.21µg/mL, P=ns) and PH due to lung disease and/or hypoxia (0.80±0.22U/mL; 0.54±0.17µg/mL, P=ns). However, a significant reduction of ADAMTS13 activity and concentration was found in patients with PAH associated with connective tissue disease (CTD) (0.77±0.27U/mL; 0.46±0.22µg/mL) compared to patients with idiopathic PAH, hereditary PAH and PAH associated with drug/toxins (1.06±0.27U/mL, P=0.01; 0.62±0.19µg/mL, P=0.05), and also in patients with PH due to lung disease and/or hypoxia (0.80±0.21U/mL). Gel-based analysis of the size of vWF multimers was in accordance with these findings.

Conclusion: No significant difference of ADAMTS13 activity and concentration was observed in plasma levels of patients with CTEPH compared to PAH or PH due to lung disease and/or hypoxia. However significantly reduced ADAMTS13 activity and concentration were found in patients with PAH associated with CTD, and PH due to lung disease and/or hypoxia compared to patients with idiopathic PAH, hereditary PAH and PAH associated with drug/toxins.