

## **CTEPH and biomarkers of endothelial dysfunction.**

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**Purpose:** Endothelial dysfunction is considered as one of the most important pathomechanisms underlying venous thromboembolism and atherothrombosis. The objective of this study was to analyze the association between chronic thromboembolic pulmonary hypertension (CTEPH), pulmonary embolism (APE) and endothelial dysfunction.

**Methods:** We studied 82 patients (37F, age  $38 \pm 10.6$  yrs) after first episode APE (mean follow up,  $1.1 \pm 0.7$  yr) without significant co-morbidities, 20 patients with CTEPH (13F, age  $71.3 \pm 10.5$ ) and compared with 52 controls (37F, age  $37 \pm 11$  yrs). We evaluated biomarkers of endothelial dysfunction: sICAM-1 (Human sICAM-1, Biovendor), sVCAM-1 serum levels (Human sVCAM-1, Biovendor) and CD62 (Human CD62E - E Selectin, Diaclone).

### **Results:**

CTEPH patients had significantly higher serum levels of sICAM-1 (731.1; 525.1 – 816.8 ng/ml) vs controls (627.7; 330 - 994.8 ng/ml) and APE patients (679.1; 278.9 – 1005.5 ng/ml), ( $p = 0.02$ ).

Moreover, serum levels of sVCAM-1 was elevated in CTEPH patients (897.2; 491.7 – 1850.5 ng/ml) compare to APE patients (630.9; 104.90 – 2381.75 ng/ml) and controls (567.5; 348.4 - 952 ng/ml),  $p=0.0001$ .

The serum level of CD 62 was tended to be higher in CTEPH patients (35; 15.9 – 209.7 ng/ml) than in APE patients (27; 7.2 – 110.6 ng/ml) and controls (26.1; 10 - 85 ng/ml), but difference was not statistically significant ( $p = 0.4$ ).

**Conclusion:** Patients with CTEPH have higher levels of biomarkers of endothelial dysfunction than patients with history of APE and healthy controls. The results suggest that endothelial dysfunction is common phenomenon in chronic thromboembolic pulmonary hypertension and may play important role in its pathogenesis.