NON-O BLOOD GROUP SIGNIFICANTLY INCREASES THE RISK OF CHRONIC THROMBOEMBOLIC PULMONARY HYPERTENSION AFTER ACUTE PULMONARY EMBOLISM

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Objective: Prior studies which have examined risk factors for CTEPH compared those with the disease to those with idiopathic pulmonary arterial hypertension. However such a comparison may elicit factors associated with acute pulmonary embolism (PE) itself, rather than poor thrombus resolution. We studied clinical risk factors in PE patients that predict the risk for CTEPH compared to resolution of perfusion defects. Methods: We conducted a case-control trial comparing 51 patients with CTEPH to 42 patients who achieved complete resolution of perfusion defects 6 months after an acute PE. Baseline continuous variables were compared using a t-test and categorical variables were compared using chi square. Univariate and multivariate logistic regression models were created to examine the odds of CTEPH after acute PE. Results: Compared to the PE patients who had recovered, CTEPH patients had higher proportions of patients with unprovoked pulmonary embolism (85.7% vs. 54.9%, p=0.001) and non-O blood groups (85.7% vs. 40.0%, p<0.001). In the univariate analysis, those with an unprovoked VTE had 4.93 times higher (95% CI: 1.77-13.74) odds of CTEPH. Non-O blood groups had 9.00 times higher odds (2.77-29.23) of CTEPH compared to controls. The relationship between blood group and CTEPH was the only variable that persisted in the multivariate analysis. Adjusting for all other variables, those CTEPH have 13.20 times higher (95% CI: 3.57-48.77) odds of having non-O blood groups compared to those who recovered. Conclusions: Non-O blood grouping appears to be a risk factor for the progression of an acute pulmonary embolism to CTEPH.

Table 1: Univariate and Multivariate Odds Ratios for CTEPH after Acute PE

	Univariate		Multivariate	
	Odds Ratio (95% CI)	p-value	Odds Ratio (95% CI)	p-value
Age (per additional year)	0.97 (0.94-0.99)	0.016	-	
BMI (per 1 unit increase in kg/m^2)	1.07 (0.98-1.17)	0.125	-	
Female Sex	1.20 (0.53-2.72)	0.666	-	
Positive Family History of VTE	2.57 (0.89-7.39)	0.080	-	
Unprovoked VTE	4.93 (1.77-13.74)	0.002	-	
Non-O Blood Group	9.00 (2.77-29.23)	<0.001	13.20 (3.57-48.77)	<0.001
Ever Smoker	0.91 (0.39-2.14)	0.841	-	
Diabetes	1.25 (0.20-7.85)	0.812	-	
Splenectomy	1.89 (0.30-11.84)	0.499	-	