

DESCRIPTION AND PRELIMINARY RESULTS OF A NEW EXERCISE STRESS TEST FOR MEASURING FUNCTIONAL CAPACITY OF PATIENTS WITH DIFFUSE PULMONARY ARTERIOVENOUS MALFORMATIONS

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Background: To describe a new method for functional assessment of patients with diffuse pulmonary arteriovenous malformations (PAVM), using a novel exercise stress test.

Methods & Materials: Over the past three years, 25 cardiopulmonary exercise stress tests (EST) were performed on 17 individuals (9 pediatric & 8 adult) with diffuse PAVM. The ESTs were performed in the Pediatric Cardiology Exercise Lab using a progressive incremental protocol for a cycle ergometer. Baseline heart rate, electrocardiogram, and oxygen saturation data were obtained with the individual seated on the cycle. The exercise intensity started at 30 watts and increased by 30 watts every two minutes, while continuous heart rate and oxygen saturation data was obtained. The EST was ended when the individual’s heart rate reached 90% of predicted maximum or when the individual could not continue due to leg fatigue, shortness of breath, or arrhythmia. During the recovery period, heart rate and oxygen saturation data were monitored until the heart rate and saturation were within 10% of the baseline.

Results: Exercise limitation was associated with rapid rise in heart rate and fall in oxygen saturation. No complications were associated with EST and in the patients serial testing, the results were reproducible.

	AGE < 18 N=9 (4 male)	AGE > = 18 N=8 (2 male)
Baseline HR	107±12	86±12
Baseline O2 sat	.80±.10	.89±.09
Min O2 sat	.78±.13	.70±.14
Min to peak	5.8±1.6	8±2
Max watts	87±23	124±36
Weight percentile	.53±.27	
Height percentile	.63±.31	

Conclusions: Cardiopulmonary exercise stress testing provides a noninvasive, functional assessment of individuals with diffuse PAVM without exposure to radiation.