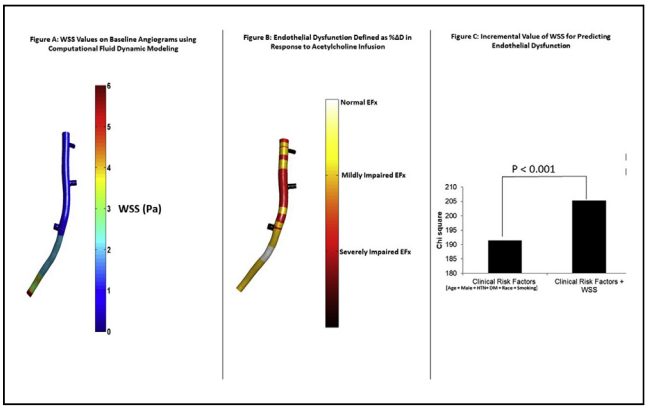

OTHER

CRT-500.06

Related Variables in the Screening for Prevalence of Prehypertension in Young Adults Students at Technical School

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BACKGROUND Worldwide, several studies have been conducted about the association between hypertension in childhood and adolescence and socio-demographic factors: lifestyle, family history and anthropometry.

OBJECTIVE This study aims to identify the prevalence of prehypertension and related variables in young adults.

METHODS Cohort study. The variables were collected by questionnaire or measures. Univariate analysis was performed using the chi square and it was performed five multiple logistic regression models for the variables with $p < 0.10$ in the univariate analysis. The students were from three courses, either college as vocational school, were evaluated: gender, age, course, skin color, income, education, lifestyle, history of hypertension, weight, waist circumference and prehypertension defined as VII Joint National Committee: systolic 120-139 and diastolic 80-89 mmHg.

RESULTS A total of 394 students were evaluated. There were 309 (78,43%) in the normal group (NG) and 85 (21,57%) in prehypertension group (PH) of students. It was found in NG and PG, respectively: females 254 (82.2%) and 44 (51.8%) ($p < 0.001$); age (three age ranges: until 19 years, 20-25 and 25-30) more frequent in older ($p = 0.001$); ethnicity (self declared) black 16 (5.2%) and 11 (12.9%) ($p < 0.001$); 62 mother's hypertension (20.1%) and 28 (32.9%) ($p = 0.024$); overweight 34 (11.0%) and 17 (20.0%) ($p = 0.045$); obese 3 (1.0%) and 10 (11.8%) ($p < 0.001$); increased abdominal circumference 37 (12.0%) and 19 (22.3%) ($p = 0.024$). At least one offive multiple logistic regression models were associated with absence or presence of prehypertension (OR, 95% CI): females (4,026, 2.373 to 6.828), age (1.081, 1.004 to 1.164), hypertensive mother (1.838, 1.027 to 3.289) and greater waist circumference (1.067, 1.035 to 1.100).

CONCLUSION About a fifth of the students were considered to be in prehypertension group. Factors associated with prehypertension this study: male, older, mother with hypertension and increased waist circumference.

CRT-500.07

The Role of Small Nerve Fibers in the Development of Atrial Fibrillation

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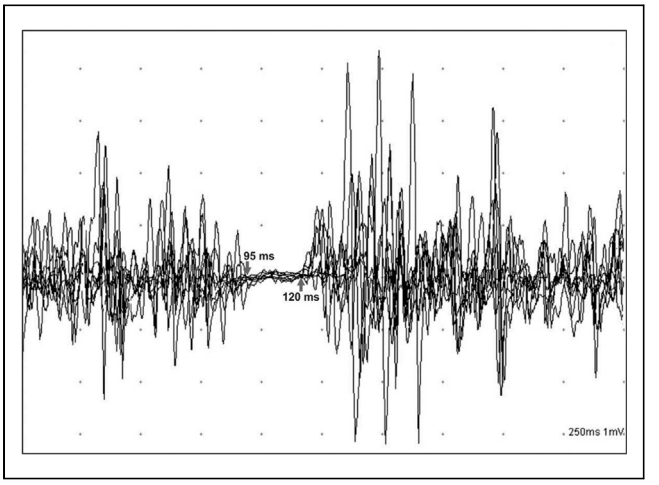
BACKGROUND Atrial fibrillation is (AF) the most common sustained cardiac rhythm disorder. Small nerve fibres carry autonomic modalities, somatic pain and temperature sensations. The aim of our study was to assess the role of small A-delta nerve fibres in the peripheral nerves of patients with AF.

METHODS The function of small nerve fibers was assessed by cutaneous silent period (CSP) elicited by electrical square pulse stimulation using stimulating ring electrodes on the index finger and recording electrodes over thenar musles. The CSP onset, end latencies and suppression of muscle activity - duration over APB were measured. Patients either with polyneuropathy or drugs that contribute to peripheral nerve involvement were excluded.

RESULTS In the study 30 patients with paroxysmal AF and 30 aged-matched healthy subjects were comprised. The mean CSP onset latency in patients with AF was significantly longer compared with the control group (86.67 ± 8.19 vs. 68.05 ± 7.81, CI 83.2-90.1 vs. 65.9-70.0), meanwhile CSP duration was markedly shorter in AF patients (45.10 ± 10.96 vs. 60.95 ± 10.14, CI 40.7-49.6 vs. 58.3-63.4). Nerve conduction study of the large motor and sensory fibers did not reveal any difference between patients and healthy subjects.

Fig. 1 Cutaneous silent period in patient with AF

CONCLUSION In our study, the main attention was focused on the extrinsic cardiac nervous system using a CSP measurement. The delay of CSP onset latency reflects the impairment of afferent volley of A-delta afferents, efferent motor axons and synaptic delay, while shortened CSP duration is related to the amount of activated axons and indicates the axonal lesion. Abnormality of CSP in AF patients supports the occurrence of small nerve fiber neuropathy. Our study of small nerve fibres may implay a new aspect in the etiology of AF.



CRT-500.09

Reliability of The Cardiac Output Measurements During Catheterization: Comparison of Various Commonly Used Formulae Calculating Assumed O_2 Consumption

Guy Kendall,[1] Graeme Kirkwood,[2] Heiko Schneider,[3] Vaikom Mahadevan,[4] Ashley Stokes,[1] Ozhin Karadakhy,[1] James Carmichael,[1] Kelly Rohan,[1] Raveenjot Nagra,[1] Tasnime Yearoo,[1] Mehul Patel,[1] Bawan Hama,[1] Amaran Gill,[1] Arjamand Shauq,[5] Andreas Hoschtitzky,[6] Petra Jenkins,[7] Jaspal Dua,[7] Purvi Shah,[8] Pradeepkumar Charla,[3] Ashish Shah[9]
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BACKGROUND Cardiac output (CO) measurement guides management of various medical conditions, including adult congenital heart diseases (ACHD) and pulmonary hypertension. It is mandatory to calculate patients' oxygen consumption (VO_2), to measure CO. Ideally VO_2 consumption should be measured by using a metabolic apparatus;

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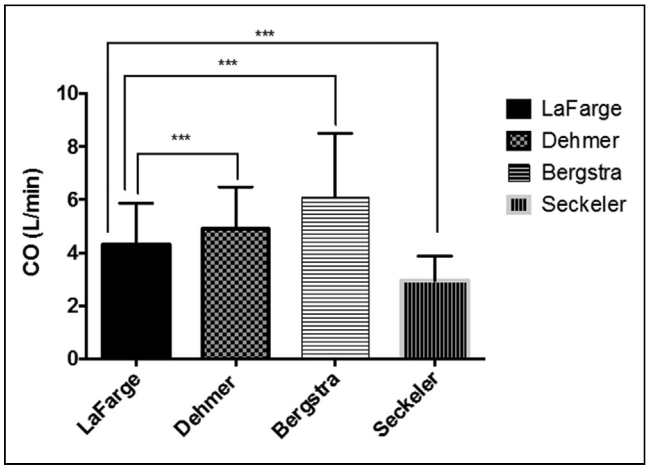
however, due to complexity in their routine use, various formulae derived assumed VO_2 are utilized. The most commonly used formula in catheter laboratories treating adult patients was reported by LaFarge. However, it was based on data from paediatric population, and their use in adult population is not validated. Additionally, limited information exploring agreement between these formulae is available. We sought to compare formulae derived CO measurement.

MATERIALS AND METHODS We sought to compare cardiac output measurement based upon four commonly used formulae, (1) LaFarge and Miettenen, (2) Dehmer, Firth & Hills, (3) Bergstra, Van Dijk, Jillege, and (4) Seckeler, Hirsch, Beekman formula in 112 ACHD patients who underwent diagnostic catheterization between 1st January 2015 to 31st March 2017.

RESULTS CO measured by various formulae is reported here with LaFarge: 4.31±1.43 L/min; Dehmer: 4.91±1.50 L/min; Bergstra: 6.1 ±2.22 L/min; and Seckeler: 2.96±0.88 L/min. LaFarge and Miettenen formula derived CO was significantly lower than Dehmer and Bergstra formulae (P<0.0001 for each), whereas significantly higher than the formula by Seckeler.

CONCLUSION There is no agreement between the formulae derived assumed VO_2 and resultant CO. Such assumed formulae derived CO may be misleading. Every cardiologist should be cognizant of these limitations. Metabolic apparatus should be routinely used in catheter laboratories to obtain true VO_2, especially, when such a value is likely to influence major management decisions.



CRT-500.10

Should the Normal Range of Pulmonary Vascular Resistance Be Re-defined in Patients with Fontan Circulation?

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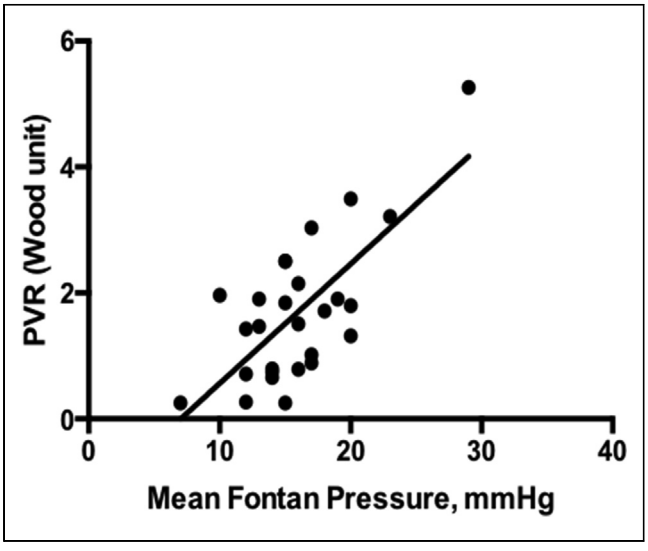
BACKGROUND Creation of Fontan circulation helps separating pulmonary and systemic circuits in patients born with single ventricle. They have impaired exercise capacity, mainly due to limited augmentation of cardiac output (CO). Studies have suggested that pulmonary vasodilator therapies improve CO by augmenting venous return. Use of such therapy is significantly sparse, as many of these patients are reported to have normal pulmonary vascular resistance (PVR). However, the normal range of PVR was defined only in those with subpulmonic ventricle and pulsatile pulmonary flow. We sought to evaluate observed PVR in this cohort.

MATERIALS AND METHODS Retrospective review of data from a large tertiary ACHD centre.

RESULTS From a cohort of 4454 patients with complex ACHD conditions, 154 had Fontan circulation; of whom 70 patients with failing Fontan were investigated by cardiac catheterization. Thirty-four (48.6%) were male, mean age of 30.1±6.2 years (17-43), and mean body mass index of 24.1±5.3 kg/m^2 (16.6-47.7). Mean Fontan pressure was 16±4 mmHg (7-29), mean wedge capillary pressure was 11±3 mmHg (4-19), and mean trans-pulmonary gradient (TPG) was 5±3 mmHg (0-15). Mean CO was 4.1±2.7 L/min and calculated PVR was 1.7±1.2 Wood units (0.25-5.3). Although cardiac output was well maintained, Fontan pressure significantly correlated with capillary wedge pressure (R^2=0.75, P<0.0001) and PVR (R^2=0.51, P<0.0001). Rise in Fontan pressure was observed earlier than increase in PVR. Interestingly, 3/4th of patients with failing Fontan were noted to have normal PVR despite elevated Fontan pressure.

CONCLUSIONS In this large series of patients with Fontan circulation, rise in PVR above the normally accepted range was observed only after moderate rise in Fontan pressure. In patients with Fontan circulation, range of normally accepted PVR should be redefined.



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