

475872 - RISK FACTOR FOR CENTRAL TO RADIAL PRESSURE GRADIENT IN CARDIAC SURGERY

Antonio Su, MD Resident¹, André Denault, md¹, Alain Deschamps, MD PhD¹, Giuseppe Fuda, MD¹, Jean Lambert, PhD³, Denis Bouchard, MD.²

1. Anesthesia, Montreal Heart Institute, Montreal, QC, Canada

2. Cardiac surgery, Montreal Heart Institute, Montreal, QC, Canada

3. Social and Preventive Medicine, University of Montreal, Montreal, QC, Canada

Introduction: Radial arterial pressure during and after cardiopulmonary bypass can underestimate the central arterial pressure (1). This problem can lead to erroneously exaggerated use of vasopressors. This study examines potential risk factors associated with an increased in femoral-to-radial arterial pressure during cardiopulmonary bypass.

Methods: After ethics board approval, this retrospective study analyzed clinical and demographic data of 129 consecutive patients that had a simultaneous central and peripheral pressure taken during their cardiopulmonary bypass (CPB) in our center. A significant gradient was defined as a central-to-radial systolic pressure higher than 10 mmHg or a mean pressure gradient higher than 5 mmHg lasting more than 5 minutes during or after CPB. Perioperative variables, pulmonary artery catheter derived hemodynamic profile and standard TEE measures were obtained. Statistical analyses were performed using Student t-test, Mann-Whitney test for continuous variables and Chi-Square test for categorical variables. Backward logistic regression was used to find the predictors of the femoral-to-radial arterial pressure gradient. A p value < 0.05 was considered statistically significant.

Results: A total of 81 men and 48 women were studied. The mean age was 66 ± 12 yr. There were mostly complex surgeries -coronary artery bypass and valvular changes- (n = 64, 50%), simple coronary artery bypass (n=26, 20%), valvular surgery (n=33, 26%) and miscellaneous (n=5, 4%). A central-to-radial arterial systolic pressure gradient defined by a systolic gradient higher than 10 mmHg or a mean pressure gradient higher than 5 mmHg was found in 54% of the 129 patients. A logistic regression identified body surface area (OR: 0.06 [0.01-0.37], p = 0.003) and preoperative use of calcium channel blockers (OR: 0.34 [0.13-0.88], p = 0.027) as being the only two independent predictors of the appearance of the femoral-to-radial pressure.

Discussion: Central-to-radial arterial pressure during or after CPB is found in 54% of the 129 patients. Lower body surface area and absence of preoperative calcium channel blockers were found to be the strongest independent predictor for the presence of a central-to-radial arterial pressure gradient. It is possible that lower body surface area patients have smaller radial arteries, thus this decrease in arterial diameter increases the peripheral resistance, one of the mechanisms believed to be the causes of the central to radial gradient (2). In the same way, the calcium channel blocker utilisation lowers this resistance, hence it's protective effect shown in this study.

References: 1 Anesthesiology 1985; 62: 557-61 2 Acta Anaesthesiol.Scand. 1994; 38: 479-85