ACUTE ALTERNATIONS IN RESPIRATORY FUNCTIONS IN PATIENTS, WHO UNDERGO DIAGNOSTIC CORONARY ANGIOGRAPHY USING ISO-OSMOLAR CONTRAST AGENTS

[1]DERYA GUZEL, [2]MUSTAFA GÖKHAN VURAL,[3] RAMAZAN AKDEMIR

[1]Assistant Professor. MD. Department of Physiology. Sakarya University. School of Medicine. Sakarya – Turkey
[2] Assistant Professor. MD. Department of Cardiology. Sakarya University. School of Medicine. Sakarya – Turkey
[3]Professor. MD. Department of Cardiology. Sakarya University. School of Medicine. Sakarya – Turkey
E-mail: [1]deryaguzel@sakarya.edu.tr, [2]mgvural@sakarya.edu.tr, [3]ramazanakdemir@gmail.com

Abstract:
Purpose: Respiratory system, while it works together with cardiovascular system for oxygen homeostasis, can be directly affected by cardiovascular disorders or indirectly by diagnostic contrast agents. Although the high diagnostic accuracy and tolerance of current contrast, contrast agents can lead acute respiratory complications in increased risk patients. The aim of this study is to evaluate acute alternations in respiratory functions of patients, who undergo diagnostic coronary angiography, using iso-osmolar contrast media; and evaluated body compositions to find out whether there is an indicator causing this deterioration.
Methods: 35 male and 25 female patients undergoing diagnostic coronary angiography (CA) were enrolled in the study. Patients with respiratory or cardiovascular co-morbidity were excluded. Before CA, all patients' body compositions were evaluated by measuring body mass index (BMI) and waist-to-hip ratio (WHR). Total body water (TBW), fat mass (FM), fat-free-mass (FFM) and basal metabolism rate (BMR) were measured via bioimpedance analysis. CA was performed via radial artery route. The pulmonary function tests of these patients were performed before, during and 2 hours after CA. FEV1Δ, FEF2575Δ and FVCΔ parameters were calculated by subtracting the measured baseline value from the measurement after CA .
Results: Angiography caused significant reduction in FEV1, FVC, and FEF25-75($p<0.01$). These reductions were maintained at each three values 2 hours after CA ($p<0.05$). FVCΔ was correlated with WHR in all of the male patients. FEF2575Δ were statistically related with FFM, TBW and WHR in male patients ($p<0.05$ and $r=-0.344$, $r=-0.347$, $r=0.357$, respectively) .
Conclusions: Our study demonstrated that diagnostic coronary angiography using the iso-osmolar contrast media caused a significant reduction in FEV1, FVC, FEF25-75 in patients without any overt pulmonary disease. These findings indicated the asymptomatic obstructive impairment in respiratory functions. FEF2575Δ, which indicate smaller airway changes and it can be affected easily by body composition such as visceral adiposity; corraleted with FFM, TBW and WHR. Due to the persistence of these reductions even 2 hours after CA, ventilatory functions should be considered especially in patients, whose body compositions or hydrations are not within the desired physiologic range.

Index Terms - Body composition, iso-osmolar contrast agent, respiratory functions.