

## GERIATRICS

### Are Cardiorespiratory Variables Affected by Body Position?

When a certain body position is required for treatment, it may be a good idea to consider the patient's age, according to researchers from James Cook University in Townsville, Australia, who studied the cardiorespiratory effects of 5 standardized body positions in healthy adults over age 60 years.

In this observational study, researchers recruited 26 active older adults (mean age,  $73.3 \pm 5.4$  years) from 4 Probus clubs (community organizations for people over age 60 years). They measured participants' heart rate, systolic blood pressure (SBP), diastolic blood pressure (DBP), and arterial saturation of hemoglobin ( $SpO_2$ ) while situated in 5 positions: sitting, right-side lying, left-side lying, supine, and supine with the head  $20^\circ$  below the level of the body (head-down supine [HDS]). Measurements were taken every 2 minutes for 10 minutes.

Positions taken during measurements significantly influenced SBP, DBP, rate pressure product (RPP), mean arterial pressure (MAP), as well as  $SpO_2$ . Left- and right-side lying produced significantly lower SBP, DBP, RPP, and MAP, compared with HDS. Except for  $SpO_2$ , mean values for all variables remained within the recommended normal limits in all positions; therefore, all positions appear safe for the purpose of physiotherapeutic and nursing interventions. The HDS position, however, produced the highest mean values. Although those values still were within normal limits, care

should be taken to monitor patients with hypertension or a body mass index  $> 30 \text{ kg/m}^2$  when they are in the HDS position, the researchers caution. This position increased heart rate and RPP with average  $SpO_2$ , and may place an older person at risk of myocardial oxygen insufficiency.

Although most participants (77%) were taking medications, the researchers found that medications had no significant effect on any of the measures. This may indicate, they say, that regardless of the medications taken, positioning will have similar effects for older patients. It also may indicate that the medications are effective in stabilizing cardiorespiratory function in any body position.

Other research has shown that people over age 60 years have a tendency to adopt the right-side lying position for sleeping because of changes in cardiovascular function or chest tightness and difficulty breathing while in the left-side lying position. Since this study only assessed participants at rest for 10 minutes, future studies should evaluate the cardiovascular effect of different positions over longer periods of time, including during bed rest.

Source: *Arch Gerontol Geriatr.* 2011;52(1):23–27.  
doi:10.1016/j.archger.2009.11.005.

## CARDIOVASCULAR DISEASE

### Pericardial Effusion: How Much Does Size Matter?

Large pericardial effusions can be dangerous, but what about small effusions? Researchers say that we don't know how dangerous they are because we don't know much about their natural history—leaving clinicians uncertain as to the implications of an incidental effusion. To that

point, researchers conducted a study to determine the prevalence of incidental, small pericardial effusions on echocardiography, the progression to tamponade, and the association with outcome.

The study patients were veterans undergoing echocardiography at 1 of 3 VA laboratories in northern California from August 1998 to June 2005. Patients who were referred for evaluation of the pericardium, had surgery within the previous 60 days, had pericardial effusions defined as moderate or greater ( $\geq 1 \text{ cm}$ ), or had inadequate visualization of the pericardial space were excluded from the study.

Of 9,350 patients, 534 had a small pericardial effusion. Compared with patients with no effusion, these patients were slightly older; more likely to be hospitalized; and more likely to have a history of heart failure, diabetes, renal disease, or neoplasm. Patients with an effusion had a lower ejection fraction and were more likely to have atrial enlargement and moderate or greater mitral or tricuspid regurgitation. When patients were grouped by diagnosis, an effusion was significantly more common in patients with a history of heart failure, prior malignancy, liver disease, or diabetes, but not ischemic heart disease.

During a mean of  $2.3 \pm 1.9$  years of follow-up, 2,125 patients died. At 1 year, 26% of patients with a small effusion had died, compared with 11% of patients without an effusion. The survival difference was evident within the first 100 days of diagnosis and persisted throughout follow-up.

While the study revealed that the progression of an incidental small pericardial effusion was rare, including no development of tamponade, the researchers stress that small effu-

sions were associated with shortened survival. Even after adjusting for such risk factors as structural heart disease, the presence of a small pericardial effusion remained significantly associated with a higher risk of death. Furthermore, the researchers say, the negative survival impact was seen across multiple subgroups.

Among the study patients with an effusion, 211 (40%) underwent follow-up echocardiography. The effusion resolved in 136 (64%) of patients; 63 patients (30%) showed no change, and the effusion increased in 12 patients (6%). However, of those 12 patients, none developed a large effusion, an echocardiographic or clinical diagnosis of cardiac tamponade, or underwent pericardiocentesis.

Their study has several clinical implications, the researchers note. For one, a small pericardial effusion rarely leads to tamponade; thus routine follow-up echocardiography is not warranted, unless other factors suggest the effusion is still there. The researchers also suggest that, while a small effusion should not lead to any specific therapy, it should prompt the clinician to consider progressive chronic and inflammatory diseases as the etiology. They add that the increased risk of death may be used along with other clinical characteristics when estimating a patient's prognosis.

Source: *Am Heart J.* 2011;161(1):152-157.  
doi:10.1016/j.ahj.2010.10.007.

## RESPIRATORY DISEASE

### Reframing the Discussion on Obesity and Asthma

It seems counterintuitive, but obesity is not associated with asthma severity or health care utilization, according to researchers from the University of Texas Health Science Center, Altarum Institute, and Texas Transplant Institute, all in San Antonio, Texas.

The 12-month, randomized, controlled study compared disease management with traditional care of 902 patients (473 children [age 5 to 17 years] and 429 adults [age 18 to 64 years]). All patients had a documented physician diagnosis of asthma and did not have any other lung disease or any diagnosis that required long-term use of systemic corticosteroids. In the children, 45% were deemed obese (body mass index [BMI]  $\geq 30$  kg/m<sup>2</sup>), while, in the adults, 58% were considered obese.

Researchers collected data on asthma severity, medication use, and spirometry findings at baseline, 6 months, and 12 months. They surveyed participants every 2 months on health care utilization and assessed quality of life (QOL) using the pediatric and adult versions of the Asthma QOL Questionnaire and the 36-Item Short Form Health Survey.

They found that obesity did not have a significant effect on asthma severity, spirometry findings, QOL, or health care use in children. Obese adults had a lower forced vital capacity (FVC) and a lower QOL, compared with nonobese adults, but there was no difference in asthma severity or health care use.

The researchers say the conflicting findings regarding the observed association between obesity and asthma prevalence and severity may be due to differences in the definition of asthma. Their study used stringent criteria for the diagnosis of asthma; they only enrolled patients with a documented physician diagnosis supported by clinical or spirometric data. Approximately 40% of the patients demonstrated obstruction on baseline spirometry, and more than 25% demonstrated a positive bronchodilator response despite being maintained on 1 or more controller medications.

Adults with a BMI  $> 30$  kg/m<sup>2</sup> did not have more severe asthma based on

spirometry findings, nocturnal waking, or rate of exacerbations. When use of controller medications was included in the analysis, the researchers did not detect a significant difference in asthma severity by BMI group. They also found no difference in severity in children grouped by BMI, and no association of obesity with pulmonary function findings or with airway hyperresponsiveness. Therefore, the researchers say, although symptoms and medication use were more common in obese patients, they did not have the objective evidence to support that asthma was more severe in this group.

Obesity was associated with a significant decrease in prebronchodilator FVC, and a consequent significant increase in the forced expiratory volume in 1 second (FEV<sub>1</sub>) ratio. However, in comparing obese patients with nonobese patients, the researchers found no significant differences in the percentage of predicted FEV<sub>1</sub> or in the response to bronchodilators. Interestingly, while obese adults showed lower QOL scores, children did not (4.8 for obese children vs 5.0 for nonobese children).

The researchers note that the study population was predominantly indigent and Hispanic, which may limit the generalizability of the results. In addition, the sampled patients tended to have moderate to severe asthma, and the results may not apply to patients with less severe disease. ●

Source: *Ann Allergy Asthma Immunol.* 2011;106(1):30-35. doi:10.1016/j.anai.2010.10.015.

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