Dr. Lunsford,

In general terms, diastolic heart failure (left heart failure with preserved ejection fraction) occurs when the heart loses the ability, due to its’ thick and stiff heart muscle, to contract enough to propel blood flow forward, which causes problems with contraction and ejection of blood. Medical conditions such as aortic stenosis, hypertension, mitral regurgitation, and ischemia can cause the heart muscle to become thin and weak. In contrast, systolic heart failure (left heart failure with reduced ejection fraction) occurs when the heart contracts normally but the ventricles are unable to adequately relax and fill with enough blood, due to a thin and weak heart muscle, and less oxygen rich blood is pumped out into the body. This can be caused by mitral stenosis, tamponade, and hypertrophy (Komamura, 2013).

Assessment findings, such as edema, pulmonary rales, and jugular venous distention, are similar in both systolic and diastolic heart failure. However, the presence of a third heart sound (ventricular gallop) and displaced cardiac apex (the apex beat should normally be palpable at the fifth intercostal space and half an inch medial to the left midclavicular line) is usually indicative of systolic heart failure (King, Kingery, & Casey, 2012). How the patient responds to exercise can also indicate whether the patient is experiencing systolic versus diastolic heart failure. In diastolic heart failure, the thick and stiff heart muscle requires more pressure be placed in the left ventricle, in order to maintain cardiac output during exertion. However, the increased pressure can cause stiff lungs or permit fluid to be transported into the alveoli leading to breathlessness. On the other hand, in systolic function, the patient is more likely to report fatigue during exercise. This occurs when the thin and weak heart is unable to adequately increase the stroke volume in response to exercise. Without adequate cardiac output, the muscles used during exercise are unable to be perfused and sends signals to the brain, which the patient interprets as fatigue (Lopez et al., 2012). Echocardiography, however, remains the most widely acceptable method for diagnosing systolic or diastolic heart failure by assessing left ventricular ejection fracture, left ventricular size, wall thickness, valve function, and the pericardium (King et al., 2012).

Elizabeth

References

Lopez, P., Vazquez, J., Campos, A., Bueno, L., Torres, J., & Beiras, A. (2012). The causes, consequences, and treatment of left or right heart failure. *Vascular Health and Risk Management, 7*, 237-254. doi:10.2147/VHRM.S10669

King, M., Kingery, J., & Casey, B. (2012). Diagnosis and evaluation of heart failure. *American Family Physician, 85*(12), 1161-1168. Retrieved from http://www.aafp.org/afp/2012/0615/p1161.html

Komamura, K. (2013). Similarities and differences between the pathogenesis and pathophysiology of diastolic and systolic heart failure. *Cardiology and Research, 2013*, 1-6. doi:10.1155/2013/824135