

Murmurs: A Focused Assessment

Julianne Wright

School of Nursing, University of Indianapolis, 1400 East Hanna Avenue, Indianapolis, Indiana 46227, USA

Abstract

Murmurs are turbulent sounds from blood flowing through the heart due to a physiological abnormality. The term murmur indicates an abnormal heart sound, and not a term describing a medical diagnosis. Auscultating a murmur is a vital assessment audible by even an inexpensive stethoscope. Identifying a murmur is an important nursing assessment of flow of blood, just as rales are important in recognizing fluid in the lungs, or tinkling bowel sounds alerting us to an ileus. Murmur identification matters for early identification of valvular heart disease and ultimately patient outcomes. This brief article shares study findings of a skill deficit in cardiac auscultation in nursing, patient populations at risk for heart murmurs, complications stemming from VHD, and proposed remedies for the skill deficit.

Skill Deficit

As a staff nurse over the past twenty years, and clinical instructor in many hospitals over the past ten years, murmurs are not an unusual finding during assessments. Electronic documentation most often does not reflected the nurse's finding of a murmur. This striking discrepancy prompted a study over the past few years to determine if a skill deficit in cardiac auscultation could be quantified, and even resolved. The study found a significant deficit of 94%. Five heart murmurs were documented by nurses on critical care units; patient on ventilators were excluded from the study.

Populations at Risk for VHD

Patients likely to present with abnormal heart sounds include a variety of patients, including patients with exposure to bacteria leading to endocarditis, degenerative sheering, damaged heart valves, and anatomical malformation. Below is a more comprehensive list of physical condition associated with heart murmurs due to these factors (Table 1).

Murmurs Matter

Murmurs can result from valvular heart dysfunction, septal defects, and coarctation of the aorta. These pathological conditions affect cardiac output, direction of blood flow through the heart, and pooling of blood around the valves. These conditions are precursors to poor tissue perfusion, peripheral edema, pulmonary edema and emboli, all of which can cause cardiovascular and cerebrovascular complications [1]. Murmur identification can signify new or know findings of a cardiomyopathy that has caused work overload on the valves, pulmonary emboli traveling from thrombi from vegetation or pooling of blood around dysfunctional valves, or a coarctation of the aorta. Valvular heart disease is proposed to be a cardiac epidemic by 2020 in the United States due to increasing rates of obesity and prolonged life-expectancy.

Focused Assessment

Using an ordinary stethoscope, a murmur is audible as a prolonged heart sound or swishing noise. Sounds of the heart correlate with the heart rate, as opposed to the swishing noise heard with respirations at a rate closer to 16 breaths per minute. A swishing sound at the rate of respirations is indicative of turbulent air through the airway creating sounds such as wheezes or rhonchi. From hundreds of assessments done for the skill deficit study, the best placement to begin heart sound assessments are at Erb's point. When suspecting you are auscultating a prolonged heart sound or swishing coinciding with the heart beat; auscultating sites with the diaphragm of the stethoscope

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in a cup like fashion around the heart as if you were placing EKG leads. The other sites to auscultate are on each side of the sternum at the second intercostal space, and with the bell. During a routine review of systems, heart sounds should be a focused assessment for early recognition of VHD.

Significant Outcomes

The skill deficit study was conducted on 18 critical care units from eight local Indianapolis hospitals in Indiana. The murmurs were identified with a regular and inexpensive stethoscope, and recorded with a StethAssist™ stethoscope for cardiology validation by Dr. Morton Tavel, FCAA. After the initial phase of the study, educational interventions consisted of explaining the techniques for listening to a murmur and the implications of a purposeful assessment for murmurs to patient's outcomes. Findings from nursing documentation after education showed a significant reduction in the skill deficit in cardiac auscultation among nurses, rendering only a 47% deficit in identifying cardiac murmurs. Nursing documentation reflected 44 murmurs. The unidentified murmurs were being cared for by predominantly a newly hired or resource nurse not receiving the educational in-service. Nursing surveys from this population of nurses revealed a lack of skill preparation in cardiac auscultation during nursing school and hospital training sessions.

Resolution

Murmur identification is a relatively easy assessment for those with normal hearing and even with the most inexpensive stethoscopes. A focused nursing assessment of heart sounds will improve surveillance for cardiovascular disease and associated complications. With a dedicated educational plan and simulation of heart sounds for practice of auscultation skills, nurses can become confident in an accurate identification of abnormal heart sounds.

Conclusion

Cardiovascular disease is the leading cause of death and disability, and cerebrovascular disease is the fourth leading cause of death in the United States [2]. The costs exceed \$503.2 billion annually due to

Corresponding Author: Dr. Julianne Wright, School of Nursing, University of Indianapolis, 1400 East Hanna Avenue, Indianapolis, Indiana 46227, USA, E-mail: juwright@uindy.edu

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Physical Conditions	Associated Risk Factors
Risks for endocarditis: bacterial infection	Occupations/systemic infection: farming, military [5] Social: IV drug abuse Invasive procedures: dental, medical Systemic infection: streptococcus – rheumatic heart disease [1]
Degenerative sheering: heart valves with high velocity of blood flow during work-outs &/ or extreme stress	Occupation: Firefighters, pilotsesp. with bi-cuspid aortic valve[7] Social: extreme sports (Yuan, 2013) Pregnancy: increased SV/dormant congenital valve disorder [1]
Disease or damage to: heart muscle/valves	Medical conditions: hypertrophy, cardiomyopathy, heart failure [1] Accidents: thoracic or cardiac injury [1] Immune System autoimmune, Marfan’s syndromes [1] Chronic inflammation: obesity [6], aging [1]
Anatomical malformation	Congenital: mitral valve prolapse, coartation of aorta, valve dysplasia, bicuspid aortic valve [1]

Table 1: Physical conditions associated with VHD.

these diseases and their complications [3]. Cardiovascular disorders involving VHD already account for 10% to 20% of all cardiac surgical procedures performed in the United States [4]. Considering the need for an aortic valve replacement alone, it is reported that 50 percent of patients will not survive on an average of two years after they experience initial symptoms [5,6]. Considering VHD becoming a cardiac epidemic, early detection to evaluate and minimize adverse effects on heart function should be a priority in healthcare.

Upon the findings of certain cardiac murmur in adults, an echocardiography is recommended. Murmurs that are known to be diastolic, continuous, holosystolic, and others; in addition to murmurs that clinicians cannot characterize, a cardiology referral or echocardiogram is prudent [1,7]. Nursing’s vigilance in heart sound assessments, in addition to capitalizing on strategies such as adapting a point-of-care using technology for improved identification of heart murmurs. A new technology to investigate includes a phonocardiogram (PCG) stethoscope attachment enhancing surveillance of these types of cardiac murmurs in the prevention cardiovascular complications.

Competing Interests

The author declare that she has no competing interests.

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