**Cardiac Case Study**

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The issue of Congestive Heart failure has become rampant among elderly men. This is reflected in the case of Mr. Jack H. Schustun, a 57 year old male who was brought to the Emergency Department (ED) with chief complaint of shortness of breath(SOB). He has a past medical history of CAD with an MI in 2018 that required stent placement in the left anterior descending artery. His medical history comprises hypertension, hyperlipidemia, gout, and a reformed smoker. In the past month, the patient has reported worsening SOB at night that has affected his ability to sleep. These symptoms combined with the admission that Mr. Schustun was a reformed smoker with over 25 years of smoking, makes the patient likely to suffer from Congestive Heart failure. Therefore, it is essential to understand the predisposing risk factors for CHF development in Mr. Schustun, expected diagnostic tests, prioritized treatment, and health education priorities that Mr. Schustun needs to understand to improve his health status.

Mr. Schustun has several risk factors that predispose him to Congestive Heart failure. James had a previous medical history of CAD and MI which provides a background for the possible damage of the heart muscle that lessens its capacity to pump blood effectively leading to the development of CHF. Moreover, his records illustrate that he suffered from hypertension which exerts pressure on the heart to work extra hard, that results in thickening and growth of its muscles leading to heart failure. Even though his body weight and height are average for his age, his history of Hyperlipidemia indicate that he has a higher rate of contracting CAD which increases the potential of heart failure.

Several tests can be incorporated to diagnose Mr. Schustun’s conditions. These tests include echocardiogram, natriuretic Peptide (BNP) or N-terminal proBNP (NT-proBNP), and chest X-ray. First, Jack can be tested using an echocardiogram. According to Keller et al. (2023), an echocardiogram can be effectively used to evaluate the anatomy and physiology of the heart that is vital in diagnosing congenital and other forms of heart disease. Mr. Schustun demonstrated shortness of breath, swelling of the legs and irregular heart beats. Nevertheless, the echocardiographic test can be effective in identifying the presence of any abnormalities in the heart or around the heart vessles (Keller et al. 2023). The second test that can be used to assess Mr. Schustun’s health is an type Natriuretic Peptide (BNP) or N-terminal proBNP (NT-proBNP) test. According to Cao et al. (2019), High levels of BNP or NT-proBNP predict heart failure because both are released in response to increased ventricular volume and pressure. In this instance, Mr. Schustun's vital signs show increased respiratory rate (28 breaths/min), low oxygen saturation (87% on room air), irregular and thready heart rate (120 bpm), and low blood pressure (100/68 mmHg). These changing vital signs indicate a compromise in his cardiovascular system. Therefore, a BNP or NT-proBNP test can be effectively used to assess the varying vital signs of Mr. Schustun. The final test is the X-ray test. According to Hsia et al. (2023), the symptoms of heart failure can be detected through a chest X-ray, where one may develop a condition of cardiomegaly, pulmonary congestion and pleural effusion among others. Therefore, Mr. Schustun’s symptoms, including shortness of breath, orthopnea, crackles on lung auscultation, peripheral edema, physical appearance, vital signs, and his cardiac history, all indicate the need for a chest X-ray to evaluate the presence and extent of pulmonary congestion, cardiomegaly, and other potential thoracic abnormalities.

Similarly, Mr. Schustun can undergo priority treatments that can help improve his health. These treatments include diuretics such as furosemide, ACE inhibitors or ARBs and Beta-Blockers like metoprolol. First, diuretics can be incorporated to help reduce excessive fluids in Mr. Schustun's body resulting from CHF (Cuthbert & Clark, 2024). Since Mr. Schustun developed shortness of breath, orthopnea, peripheral edema, and pulmonary crackles, the use of diuretics can offer considerable symptomatic relief since it will help to relieve fluid overload in the lungs, reduce swelling of the lower limbs and the heart workload, which in turn will enable him breathe more easily, especially at night, be able to mobilize and have enhanced energy. Second, using ACE inhibitors or ARBs can help improve Mr. Schustun’s symptoms. According to Herman and Bashir (2023), these drugs enhance survival, decrease the frequency of hospitalization, and provide symptom relief for heart failure patients. The administration of ACE inhibitors or ARBs alleviates Mr. Schustun’s symptoms of shortness of breath, fatigue, and peripheral edemia; they lower his blood pressure and reduce the workload on his heart tissue and decreases fluid retention to improve cardiac output. These medications help to decrease the activity of renin-angiotensin-aldosterone system which results in widening of the blood vessels and reduction in fluid accumulation and as such relieves congestive heart failure symptoms. Finally, Beta-Blockers like metoprolol can effectively help relieve Mr. Schustun’s symptoms by reducing his heart rate. Masarone et al. (2021) explain that Beta-Blockers offer long term benefits in lowering mortality and enhancing left ventricular function in patients with CHF. Beta-blockers like metoprolol are useful in managing shortness of breath, fatigue, and palpitations in Mr. Schustun as it lowers the rate of contraction of the heart muscle, thus making the heart pump more efficiently and require lesser oxygen. This results in enhanced amount of blood pumped per beat, leading to decreased load on the heart and symptom relief in heart failure patients.

The heal are institution should provide Mr. Schustun with key education to ensure that he takes necessary initiatives and steps to improve his health conditions. First, it is essential to make sure that Mr. Schustun understands the importance of managing his medication intake. Seid et al (2023) stated that non-adherence with heart failure medications leads to more frequent hospitalizations and increased mortality rates. As such, education about medical adherence would help Mr. Schustun understand how the treatment medication like diuretics and Beta-Blockers ensure proper management of his CHF conditions such as regulating blood pressure and heart rate. Furthermore, it is essential to educate Mr. Schustun on the importance of implementing dietary modifications. Dietary modifications as an education priority would enable Mr. Schustun to have a reduction in his shortness of breath, swelling, and fatigue since a low sodium diet aids in the reduction of fluid accumulation and moderation of blood pressure. This aids in avoiding fluid accumulation and the worsening of heart failure, as well as contributes to the better management of overall cardiac symptoms. For instance Mullens et al. (2024) explain that low sodium diet is advisable as it helps in reduction of symptoms and enhancing the prognosis among patients suffering from heart failure. Finally, the education priority should include education on the importance of physical activity and rest to improve Mr. Schustun’s symptoms. Exercise training, based on the individual needs of the patient, increases exercise tolerance and quality of life in heart failure patients (Li et al., 2024). Physical activity and rest as an education priority would enable Mr. Schustun reduce symptoms of fatigue and poor exercise tolerance by increasing his cardiovascular fitness, circulation and endurance. Engaging in exercises alongside recovery enables avoiding excessive exertion on the heart and enables the heart to recover hence increasing energy levels and functional capacity.

In retrospect, based on Mr. Jack H. Schustun’s presentation of shortness of breath and his medical history, congestive heart failure can be inferred. Understanding his risk factors, reviewing the diagnostic tests that would be needed in the future, and ensuring that priority treatments and health education are established are crucial in managing his condition. Adherence to the existing literature will help the healthcare team deliver care that will enhance his quality of life and health status.

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