

Pathophysiology

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Question 1

Acute coronary syndrome refers to a group of symptoms that can be recognized with obstruction of coronary arteries. This condition encompasses a variety of thrombotic diseases of the coronary arteries such as unstable angina, acute ST-segment elevation myocardial infarction, and non-ST-segment elevation myocardial infarction. Usually, this condition is accompanied by chest pains as is the case in this scenario of K. R. In the case of K. R, his acute condition can be identified by the electrocardiographic changes such as T-wave tenting or inversion of the T-waves in the 12 leads with the principal R-waves. Other ways include elevation of the ST-segment or depression, and pathologic Q-waves (Porth & Porth, 2011).

Question 2

The changes in cardiac enzyme levels include the elevated troponin I, elevated myoglobin, elevated CPK and cardiac troponin T. However, cardiac troponin T, and I are the most common marker of myocardial injuries due to their high specificities and sensitivities for diagnosis of acute myocardial infarction.

Question 3

The most common pathophysiologic precipitating events of ACS are plaque rupture, hypertension, chest discomforts and pains that spreads to the left arm and lower jaws. The chest pains are usually associated with sweating and nausea. The other precipitating events can include anemia, acute thrombosis that is induced by rupture and an unstable angina. Bradycardias or excessive slow heart rate and tachycardias (excessive faster heart rate) may also precipitate the ACS (Porth & Porth, 2011).

Question 4

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The rationale includes administering of reperfusion therapy either with percutaneous coronary intervention (PCI), thrombolytic therapy or bypass surgery in the failure of the two methods. However, pre-hospital thrombolysis (PHT) is more preferred than percutaneous coronary intervention (PCI) due to the time factor. Consequently, all STEMI patients on COX-2 inhibitors except aspirin is to discontinue their use due to increased mortality risk, heart failure, hypertension, reinfarction and myocardial rupture related to their use. Additionally, IV Beta Blockers should be given during the first 24 hours.

Question 5

The use of morphine and nitroglycerin in managing ischemic chest pains is because morphine helps in reducing the discomfort as a pain reliever while nitroglycerin temporarily opens the arteries thus, enhancing the flow of blood to and from the heart (Porth & Porth, 2011).

Reference

Porth, C., & Porth, C. (2011). *Essentials of pathophysiology: Concepts of altered health states*. Philadelphia: Wolters Kluwer/Lippincott Williams & Wilkins.