Pathophysiology: Adriamycin is a broad-spectrum antibiotic that is frequently used to treat various types of cancer, including breast cancer. It works by intercalating with DNA, thereby inhibiting DNA synthesis and replication. This mechanism of action is crucial for the treatment of breast cancer, as it effectively targets cancer cells and slows their growth.

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Pharmacovariable approach: Pre-hospital thrombolysis followed by PCI within 6-24 hours Primary PCI: The preferred presentation strategy with the best outcomes achieving effective reperfusion in 90-95% of cases and decreases the likelihood of defibrillation arrest as it causes the amount of infarction (Harrington & Lebbin, 2010). However according to the AECOC (2006) guidelines where there is delay in PCI its efficacy over thrombolysis is lost - maximum acceptable delay from presentation to PCI is 60 minutes where a patient presents within 1 hour of symptom onset. The CAPTIM study outlines the benefits of this management model where prehospital thrombolysis precede PCI demonstrated by a 5 year follow-up. Mortality was 5.8% in the thrombolysis group and compared to 11.1% in the primary PCI group when treatment was commenced within 2 hours of onset (p=0.04) (Bonfeylly et al., 2009). Yano et al. (2010) also showed similar results concluding that patients who underwent both interventions had better myocardial perfusion and left ventricular function as a result.

Position: Fowler’s position

A position used instead of supine to assist with breathing, monitoring haemodynamics and minimising risk of aspiration in vomiting. It has been suggested that an inclination of 30° of the lower trunk and 60° of upper trunk to be the most effective positioning compared to a whole upright trunk results in lower heart rate, greater stroke volume and preload (p=0.012) (Kubota, Endo, Kubota, Ishitaku & Furutaide, 2015). The use of this position has been shown to improve cardiac output and reduce the risk of complications such as aspiration pneumonia.

Aspirin: Administer 300mg per oral to inhibitor cyclooxygenase-1 to block the formation of thromboxane A2 to prevent further platelet aggregation (Ambulance Victoria, 2016). Beigel et al. (2019) found patients who received early aspirin had less incidents of death, reoccurrence of MI and angina than patients who did not receive aspirin (p=0.048). An earlier study by Barbath et al. (2002) also supports this where it was found prehospital administration to be a determinant of survival where patients treated prehospitaly with aspirin compared in hospital had lower mortality and complication rates (p=0.002).

Glyceryl trinitrate (GTN): withheld

Rationale: May be right ventricular involvement where the heart is dependent on preload. GTN is infused to increase the activity of cyclic GMP. Vascular smooth muscle relaxes as calcium is sequestered into endoplasmic reticulum and hyperpolarisation from activation of potassium channels impedes voltage-dependent calcium channels. Decreasedcontractility rates could be required for muscle contraction (Levin & Goldstein, 2015).

Reference:


AECOC (2006). AECOC Guidelines 2006 – Acute myocardial infarction. IMC Best Practice. Retrieved from: http://www.aecoc.org.au/guidelines/Adriamycin is a broad-spectrum antibiotic that is frequently used to treat various types of cancer, including breast cancer. It works by intercalating with DNA, thereby inhibiting DNA synthesis and replication. This mechanism of action is crucial for the treatment of breast cancer, as it effectively targets cancer cells and slows their growth.

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