

Myocardial Infarction Interventions

Interventions in myocardial infarctions (MI) are aimed at reducing further myocardial tissue damage by improving oxygenation and decreasing the workload on the heart. The mnemonic MONA is often used but should not be confused with the order in which to give the medications as aspirin is recommended to be given first. If medications alone cannot return blood flow, surgical techniques can be used. The best method of care for myocardial infarctions is prevention. Other medications and surgical interventions may also be used in myocardial infarction. These include beta blockers to decrease heart rate, Glycoprotein IIa/IIIb inhibitors (abciximab & tirofiban) to decrease clotting, and ACE inhibitors or ARBs to decrease myocardial remodeling of tissue within 48 hours.



PLAY PICMONIC

MONA

Morphine

Morphine-ranger

Morphine is an opiate analgesic medication that is used only when the pain is refractory to nitrates. Analgesic medications decrease pain and stress, which decreases sympathetic activity, thus lowering heart rate.

Oxygen

O2-tank

Oxygen increases the percentage of oxygen available to the alveoli. Providing high-flow O2 maximizes the oxygenation potential of the lungs.

Nitrates

Nitro-tank

Nitroglycerin is given sublingually via tablet and also via IV in some cases. This medication causes venous dilation, which decreases the preload and workload of the heart. This decrease in workload causes less oxygen demand from the cardiac tissue. Ask the patient if they are taking medications such as sildenafil (Viagra) prior to administering these medications. Hemodynamic collapse can occur if the patient is having an infarction in the right ventricle (because these infarctions are preload dependent) or if the patient has taken a phosphodiesterase inhibitor such as sildenafil.

Aspirin

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Aspirin, commonly abbreviated ASA, decreases platelet aggregation and, to a lesser extent, decreases vasoconstriction. It is typically given as 325 mg by mouth. It is important to know that you should give non-enterically coated chewable "baby" aspirin, which is 81 mg. If using enterically coated aspirin in an emergent situation, it should be crushed or chewed.

Thrombolytics (tPA)

Trombone-light

Thrombolytics such as tPA (tissue plasminogen activator), Alteplase, or reteplase (Retevase) can be administered within 6 hours of a myocardial infarction. These medications break down clots that have already formed in coronary arteries. They have a long list of contraindications and precautions, which mostly include a history of prior bleeding or recent surgery.

Invasive Procedures

Cardiac Catheterization

Heart Catheter-cat

Also called "Cardiac Cath" or "Coronary Angiography," this procedure involves placing a long tube through an artery into the coronary arteries to evaluate the extent of coronary artery disease blockages. This procedure will indicate the need for further interventions such as stent placement or CABG.

Stent Placement

Stent

Stents are tubular mesh-like structures placed inside blood vessels to increase blood flow. They are placed via cardiac catheterization or PTCA through large arteries. Stents are coated with medications like clopidogrel (Plavix) to reduce clots from forming on the mesh.

Angioplasty

Angioplasty

Angioplasty, otherwise referred to as percutaneous transluminal angioplasty (PTCA), is a minimally invasive procedure that is used for stent placement through a large artery like the femoral. A stent is introduced over a balloon which is inflated in place pressing the stent into the walls of the vessel increasing the lumen size.

Coronary Artery Bypass Grafting (CABG)

Cabbage

Coronary Artery Bypass Graft (CABG), commonly pronounced “cabbage,” is an invasive procedure that involves removing a vein, such as the saphenous vein from the leg, and creating an artificial graft for blood flow around blocked coronary arteries.

Considerations

Decrease Modifiable Risk Factors

Down-arrow Risk Factors

Educate the patient on the importance of reducing modifiable risk factors like smoking cessation, diet modifications, and the addition of exercise into the daily routine. A sedentary lifestyle is a major cause of coronary artery disease, which leads to MI. It is important to remember that modifiable risk factors may be different with patients of varying cultural backgrounds. Patients should also abstain from excessive alcohol use and attempt to decrease stress as both increase the risk for MI.

Resuming Activity (Physical, Sexual)

Getting Physical before Sexual

Commonly, patients will inquire about when they are able to resume sexual activity. Post myocardial infarction, they should be advised it is safe to engage in sexual activity once they are able to climb two flights of stairs successfully.
