Myocardial Infarction Interventions

Interventions for myocardial infarction (MI) focus on restoring blood flow, limiting further heart muscle damage, using oxygen only when hypoxemic, and reducing the heart's workload. Aspirin is given right away. Nitrates may be used for symptom relief when not contraindicated. Supplemental oxygen is reserved for patients with SpO? < 90% or respiratory distress. If medications are not enough or rapid reperfusion is needed, thrombolytics can be considered when PCI isn't quickly available, and invasive procedures such as cardiac catheterization with angioplasty and stent placement are preferred to reopen the artery; CABG may be used when anatomy or clinical status warrants it. Other longer-term therapies may include beta blockers to slow the heart and reduce demand, ACE inhibitors or ARBs within 24–48 hours to limit remodeling, and glycoprotein IIb/IIIa inhibitors to reduce clotting in select patients. Patient education includes reducing modifiable risk factors and guidance on resuming activity, including sexual activity once they can climb two flights of stairs without chest pain.



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Management

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.

Nitrates

Nitro-tank

Nitroglycerin may be given sublingually (tablet or spray) and, if needed, as an IV infusion. It causes venous dilation, which decreases preload and lowers the heart's oxygen demand. Check for contraindications before giving: avoid nitrates if the patient is hypotensive, has a right-ventricular infarction (preload dependent), or has taken phosphodiesterase-5 inhibitors such as sildenafil (Viagra) in the past 24–48 hours, because severe hypotension can occur.

Oxygen

O2-tank

Oxygen increases the percentage of oxygen available to the alveoli. Supplemental oxygen is only indicated if the patient's SpO? is < 90 % or they are in respiratory distress. Routine high-flow oxygen is no longer recommended because it can cause coronary vasoconstriction and may worsen outcomes when given unnecessarily.

Thrombolytics (tPA)

Trombone-light

Thrombolytic drugs such as tPA (alteplase, reteplase) can dissolve clots in the coronary arteries. They are used only when rapid percutaneous coronary intervention (PCI) isn't available, and are most effective if given within 6–12 hours of symptom onset (ideally ?6 hours). Make sure to screen carefully for contraindications such as prior intracranial bleeding, recent major surgery or trauma, and uncontrolled hypertension.

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.

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Angioplasty

Angel-pastry

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.

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