Thrombolytic Therapy - Care and Management of Patients with Acute M.I. in Critical Care Areas

Site Applicability

VGH, UBCH

DELEGATED TASK

RN's working in the critical care areas.

Background Information

Select thrombolytic agents, when given promptly can open occluded coronary arteries, restoring myocardial perfusion and preventing myocardial tissue death. Thrombolytic agents (plasminogen activators) convert plasminogen to plasmin, which degrades the fibrin of a blood clot. Streptokinase and alteplase are the thrombolytics of choice for coronary artery occlusion at Vancouver General Hospital and UBCH.

Problem Statement

1. Presentation consistent with an acute MI
2. No relief from sublingual nitroglycerin
3. ECG evidence of an acute MI
4. Onset of symptoms < 4 hours
5. Evidence of ongoing ischemia.

Contraindications

1. Active internal bleeding
2. Previous thoracic, abdominal or pelvic surgery within 10 days
3. History of CVA
4. Intracranial neoplasm, arterial venous malformation (AVM), Aneurysm
5. Presence or history of bleeding diathesis
6. Severe uncontrolled hypertension
7. Recent prolonged CPR
8. History of streptokinase administration

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Relative Contraindications

1. Major surgery within the last 10 days
2. Cerebrovascular disease
3. GI or GU bleeding within the last 10 days
4. Trauma within the last ten days
5. Systolic BP > 180 or Diastolic > 110
6. High likelihood of left heart thrombus
7. Acute pericarditis
8. Subacute bacterial endocarditis
9. Hemostatic defects
10. Significant liver dysfunction
11. Previous streptokinase administration
12. Pregnancy
13. Diabetic hemorrhagic retinopathy
14. Septic thrombophlebitis
15. Occluded AV cannula
16. Advanced age i.e. > 75 years
17. Currently receiving oral anticoagulants
18. Condition where bleeding difficult to manage

Goal

Patients can expect safe administration of thrombolytic therapy and provision of continuous monitoring of cardiac function.

Procedure / Recommendations / Assessment:

PRE-PROCEDURE/INTERVENTION:

1. Remove all clothing. Note any areas of bruising or discoloration
2. Apply oxygen by cannula or mask
3. Monitor patient - record baseline monitor strip
4. Obtain STAT 12-lead EKG
5. Start IV using #18 catheter and D5W
6. Draw 20 cc blood for
    a. CBC
    b. Electrolytes
    c. Creatinine/BUN
    d. PT/PTT
    e. Troponin
    f. CK
    g. Group & Screen

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7. Nitroglycerin 0.3 - 0.6 mg sl prn to maximum three doses (requires physician's order)
8. Start 2nd IV in same limb if possible
9. Start 3rd IV if possible in vein distal to the other IVs with saline lock for future blood sampling
10. Obtain informed written or verbal consent
11. Avoid further venipunctures, arterial punctures, and IM injections; avoid using non-compressible vessels for invasive procedures (i.e. internal jugular, subclavian); acceptable vessel is the femoral vein.
12. Take manual blood pressures only. **DO NOT USE AN AUTOMATIC BP CUFF.**
13. Establish a baseline by performing a head-to-toe physical assessment prior to administering thrombolytic medication. Note any pre-existing area of discolouration; **ask the patient about any recent impact injuries (i.e. bumps, falls).**
14. Ensure continuous ECG monitoring of patient's cardiac rhythm, watching for ST and T wave changes and arrhythmias.
15. Monitor for chest pain continuously.
16. Check all secretions (urine, stool, emesis) for presence of occult blood prn.

Administration of Thrombolytic Agents

1. Streptokinase 1.5 million Units: reconstitute with 10 ml NS or D5W, (remove the 10 mls of solution from 100 ml MINIBAG), reconstitute and add to the 90 mls remaining in the minibag.
2. Infuse over one hour via pump.

***No Heparin in the first 24 hours when streptokinase used.**

1. rt-PA: Mix 100 mg rt-PA with 100 ml sterile water physician to bolus 15 mg over 2 minutes followed immediately by infusion:
    a. 0.75 mg/kg over 30 min (to a maximum of 50 mg) followed by
    b. 0.50 mg/kg over 60 min (to a maximum of 35 mg)

***Total maximum dose = 100 mg**

***Heparin: initiate Heparin bolus and infusion concurrently with TPA as soon as possible - see physician orders.**

DURING PROCEDURE/POST PROCEDURE/INTERVENTION:

1. Thrombolytic infusion must be complete prior to transfer to CCU if commenced in Emergency.
2. Thrombolysis takes place 30-45 min after therapy begins.
3. Monitor neuro vital signs and neurological status (for signs of cerebral hemorrhage) every 15 minutes during the period of the thrombolytic infusion, then q1h x 4, then q4h x 48 hours. Report any changes to the physician.

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4. Be ready to prepare patient for further medical interventions: PCI or repeat thrombolytic therapy.
5. Assess for signs and symptoms of allergic reactions including urticaria, flushing, pruritis, fever, shivering and bronchospasm (rare) during and following administration of thrombolytic agent.
6. To identify coronary reperfusion look for:
    a. Normalization of the ST segment
    b. Relief of chest pain or ischemic symptoms
    c. Reperfusion dysrhythmias, such as accelerated idioventricular rhythm, bradydysrhythmias and ventricular tachycardia.
    d. If patient develops recurrent chest pain, nausea, diaphoresis, ST elevation, or symptomatic dysrhythmias, notify the physician immediately.
    e. If reperfusion dysrhythmias occur they usually subside within a few minutes and without treatment.
    f. Perform a physical assessment every shift and include inspection of skin for bruising, petechiae, subcutaneous bleeding. Areas of bruising should be marked on the skin with ink in order to follow extension. Check venipuncture, IV sites for bleeding or signs of hematoma formation. Monitor all secretions (emesis, urine, stool) for presence of occult blood.
7. Cap, instead of pulling out, non-patent IV's for first 24 hours after administration of thrombolytic agent. If removal is unavoidable, compress site for at least 30 minutes.
8. Ensure a soft diet; administer laxatives as necessary.
9. Handle patient gently to avoid bruising.
10. Ensure no tooth brushing for 24 hours following administration of thrombolytic therapy.
11. No shaving with a straight razor for 24 hours

ASSOCIATED GUIDELINES / FORMS / EDUCATIONAL MATERIAL:

1. The purpose of the thrombolytic therapy.
2. For the first 24 hours after administration of thrombolytic agent:
    a. no shaving
    b. no tooth brushing
    c. no straining for bowel movements
3. The signs of bleeding and how to avoid the risks for bleeding.
4. To notify the nurse when experiencing chest pain and to provide a description to the nurse.
5. The need to carry the "Streptokinase Alert Card" with them at all times and to present it to hospital staff immediately upon arrival at hospital. It is important to know whether previous doses have been given.
6. Recommend they acquire a Medical Alert Bracelet.

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Alternate Search Terms

MI acute MI myocardial infarction

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