PCI post Thrombolysis, How to apply?

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2013 ACCF/AHA Guideline for the Management of ST-Elevation Myocardial Infarction

Primary PCI  Fibrinolysis

Fibrinolytic therapy

Non- PCI center

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Class</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>When fibrinolysis is the reperfusion strategy, it is recommended to initiate this treatment as soon as possible after STEMI diagnosis, preferably in the prehospital setting.</td>
<td>I</td>
<td>A</td>
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<tr>
<td>A fibrin-specific agent (i.e. tenecteplase, alteplase, reteplase) is recommended.</td>
<td>I</td>
<td>B</td>
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<tr>
<td>A half-dose of tenecteplase should be considered in patients ≥75 years of age.</td>
<td>IIa</td>
<td>B</td>
</tr>
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Dose of fibrinolytic agents

<table>
<thead>
<tr>
<th>Drug</th>
<th>Initial treatment</th>
<th>Specific contra-indications</th>
</tr>
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<tbody>
<tr>
<td>Streptokinase</td>
<td>1.5 million units over 30-60 min i.v.</td>
<td>Previous treatment with streptokinase or anistreplase</td>
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<tr>
<td>Alteplase (rPA)</td>
<td>15 mg i.v. bolus</td>
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<tr>
<td></td>
<td>0.75 mg/kg i.v. over 30 min (up to 50 mg)</td>
<td></td>
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<tr>
<td></td>
<td>then 0.5 mg/kg i.v. over 60 min (up to 35 mg)</td>
<td></td>
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<tr>
<td>Reteploise (rPA)</td>
<td>10 units + 10 units i.v. bolus given 30 min apart</td>
<td></td>
</tr>
<tr>
<td>Tenecteplase (TMK-TPA)</td>
<td>Single i.v. bolus:</td>
<td></td>
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<tr>
<td></td>
<td>30 mg (6000 IU) if &lt;60 kg</td>
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<tr>
<td></td>
<td>35 mg (7000 IU) if 60 to &lt;70 kg</td>
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<tr>
<td></td>
<td>40 mg (8000 IU) if 70 to &lt;80 kg</td>
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<tr>
<td></td>
<td>45 mg (9000 IU) if 80 to &lt;90 kg</td>
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<tr>
<td></td>
<td>50 mg (10000 IU) if ≥90 kg</td>
<td></td>
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<tr>
<td></td>
<td>It is recommended to reduce to half-dose in patients ≥75 years of age.</td>
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</table>

Randomized 1000 patients presenting with STE or BBB fibrinolytic therapy and control

significant absolute mortality reduction

30 per 1000 for those presenting within 0-6 h and
20 per 1000 for those presenting 7-12 h from symptom onset

Lancet 1994; 343: 311-22
Max. Benefit of Fibrinolysis

Thrombolytic therapy in the elderly

With the new FTT data, there is now clear clinical trial evidence that thrombolytic therapy is beneficial in elderly patients who present within 12 h of symptom onset and fulfill the electrocardiographic eligibility criteria. Their event rates remain high even with the best new thrombolytic regimens available and irrespective of the reperfusion strategy used. But rather than being excluded from treatment, the elderly should be the focus of more intensive research so that better treatments can be developed. Considering all of the information currently available...

Six randomized trials (n = 6434)

Early Mortality Reduction by 17%

PCI after fibrinolytic therapy: How, When, and Why?
Primary PCI and fibrinolysis procedures

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<td><strong>Interventions following fibrinolysis</strong></td>
<td></td>
<td></td>
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<tr>
<td><strong>Transfer after fibrinolysis</strong></td>
<td>I</td>
<td>A</td>
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<tr>
<td>Transfer to a PCI-capable centre following fibrinolysis is indicated in all patients immediately after fibrinolysis.</td>
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<td></td>
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<tr>
<td><strong>Interventions following fibrinolysis</strong></td>
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<tr>
<td>Emergency angiography and PCI if indicated is recommended in patients with heart failure/shock.</td>
<td>I</td>
<td>A</td>
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<tr>
<td>Rescue PCI is indicated immediately when fibrinolysis has failed (&lt; 50% ST-segment resolution at 60-90 min) or at any time in the presence of haemodynamic or electrical instability, or worsening ischaemia.</td>
<td>I</td>
<td>A</td>
</tr>
<tr>
<td>Angiography and PCI of the IRA, if indicated, is recommended between 2 and 24 hours after successful fibrinolysis.</td>
<td>I</td>
<td>A</td>
</tr>
<tr>
<td>Emergency angiography and PCI if needed is indicated in the case of recurrent ischaemia or evidence of reocclusion after initial successful fibrinolysis.</td>
<td>I</td>
<td>B</td>
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Indications for Transfer for Angiography After Fibrinolytic Therapy

- Immediate transfer for cardiogenic shock or severe acute HF irrespective of time delay from MI onset
- Urgent transfer for failed reperfusion or reocclusion
- As part of an invasive strategy in stable patients with PCI between 3 and 24 h after successful fibrinolysis

Although individual circumstances will vary, clinical stability is defined by the absence of low output, hypotension, persistent tachycardia, apparent shock, high-grade ventricular or symptomatic supraventricular tachyarrhythmias, and spontaneous recurrent ischemia.

When......

Reperfusion (fibrinolytic) therapy

YES

RESCUE PCI
Why......

Multicenter, UK, 427 pt STEMI with failed reperfusion therapy

When......

Reperfusion (fibrinolytic)

YES

RESCUE PCI

NO

Early Invasive (2 or 3-
**Why......**

**Routine early coronary angioplasty versus ischaemia-guided angioplasty after thrombolysis in acute STEMI: a meta-analysis (3195 patient)**
Savio P. D’Souza, Mamas A. Mamas, Douglas G. Fraser, & Farzin Fath-Ordoubadi

**Thirty-day combined endpoint of mortality, re-infarction, and ischemia**

Safe and it reduced the rates of reinfarction and recurrent ischaemia

NO increased risk of major haemorrhage

European Heart Journal (2011) 32, 972–982

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**Why......**

**Strategic Reperfusion Early after Myocardial Infarction (STREAM) study**
Randomized, multicenter, international study (15 countries), 1892 patients comparing pre-hospital fibrinolysis with PPCI in early presenting STEMI patients

End points: Death any cause, shock, CHF or re-infarction

P=0.21 pharmaco-invasive strategy

Why......

Consistency of benefit from an early invasive strategy after fibrinolysis: a patient-level meta-analysis
(Seven randomized controlled trials)

Heart 2015;101(19):1554–1561

Why......

Benefit across patient sub-groups

Relationship Between Time to Invasive Assessment and Clinical Outcomes of Patients Undergoing an Early Invasive Strategy After Fibrinolysis for ST Segment Elevation Myocardial Infarction
A Patient-Level Analysis of the Randomized Early Routine Invasive Clinical Trials

Very early angiography (<2 h) after fibrinolysis was not associated with an increased risk of 30-day death/reinfarction or in-hospital major bleeding, and angiography within 4 h after fibrinolysis was associated with reduced 30-day recurrent ischemia.
Antithrombotic in Patients With STEMI Treated With Fibrinolytic Therapy
2013 ACCF/AHA Guideline for the Management of ST-Elevation Myocardial Infarction

Adjunctive Antithrombotic Therapy to Support Reperfusion With Fibrinolytic Therapy

ASA + Clopidogrel
Reduces the risk of cardiovascular events & overall mortality
Prasugrel and ticagrelor have not been studied as adjuncts to fibrinolysis.

Conclusion

- Primary PCI remains the standard reperfusion therapy in acute STEMI
- FT should be considered in STEMI patients presenting early after symptom onset, when the expected time delay to PCI is prolonged
- All patients treated with FT (pre-hospital or in a non-PCI capable hospital) should be transferred to a PCI centre for Pharmaco-invasive strategy:
  - Rescue PCI is considered in failed fibrinolysis
  - Routine early PCI if indicated is performed between 2-24 hrs after successful fibrinolysis