

INBRIEF

Summarizing the Evidence

Thrombolytics for Acute Myocardial Infarction in a Pre-Hospital Setting: A Review

Key Messages

- In terms of safety, it is unclear how treating acute myocardial infarction by administering thrombolytics in a pre-hospital setting compares with significantly delayed thrombolytic treatment, or not administering it at all.
- When treating acute myocardial infarction, it is unclear how the safety of administering thrombolytics in a pre-hospital setting compares with thrombolytic therapy administered in a hospital setting.
- The five evidence-based guideline recommendations on the use of thrombolytics to treat acute myocardial infarction in a pre-hospital setting are mixed. One guideline recommends fibrinolysis if excessive delays are anticipated but no fibrinolysis if a percutaneous coronary intervention can be done within 120 minutes of first medical contact. A second guideline recommends fibrinolysis be administered within 120 minutes of electrocardiogram diagnosis. The third guideline recommends pre-hospital administration of fibrinolysis if the transportation time will be greater than 30 minutes. The fourth guideline recommends pre-hospital fibrinolysis only when triage and transport to a percutaneous coronary intervention capable facility is not available. The fifth guideline does not recommend fibrinolysis in patients with non-ST-elevation acute coronary syndrome.

Context

Myocardial infarction, more commonly known as a heart attack, is an acute coronary syndrome in which the heart muscle undergoes injury due to ischemia (lack of blood supply). About 63,200 adult Canadians had a first myocardial infarction in the 2012-2013 fiscal year, causing substantial morbidity and mortality. Because most myocardial infarctions occur outside of hospital, it is important to quickly assess and initiate appropriate treatment in order to

optimize patient outcomes. In the absence of contraindications, thrombolytics are frequently administered to patients following the onset of symptoms from a myocardial infarction.

Technology

Thrombolytics are provided in emergency situations to break up the thrombus (blood clot) that obstructs the affected artery in order to restore blood flow to the heart. In Canada, alteplase and tenecteplase are currently available for use. A thrombolytic is a synthetic form of tissue plasminogen activator, and it converts the plasminogen bound to fibrin clots to plasmin, which results in the degradation of the clot.

Issue

The optimal protocol for administering thrombolytics in a pre-hospital setting and the safest way to manage adverse events is currently unclear. Reinfarction after thrombolytic therapy can occur and requires prompt transfer of the patient to a hospital for an invasive assessment and possible percutaneous coronary intervention. A review of the comparative safety and evidence-based guidelines for thrombolytics for acute myocardial infarction will help inform decision-making regarding the administration of this medication in pre-hospital settings.

Methods

A limited literature search was conducted of key resources, and titles and abstracts of the retrieved publications were reviewed. Full-text publications were evaluated for final article selection according to pre-determined selection criteria (population, intervention, comparator, outcomes, and study designs).

Results

A total of 230 citations were identified in the literature search, with two additional publications identified from the grey literature. Of these, six publications (one systematic review and five evidence-based guidelines) met the inclusion criteria for this review and were summarized.

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