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CHOICE OF ANTIPLATELET THERAPY FOR PATIENTS WITH ACUTE MYOCARDIAL INFARCTION WITHOUT PCI

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Abstract: Acute myocardial infarction (AMI) remains a leading cause of morbidity and mortality worldwide. While percutaneous coronary intervention (PCI) is the preferred reperfusion strategy, a substantial proportion of patients are managed conservatively without PCI due to logistical, anatomical, or clinical reasons. Optimal antiplatelet therapy is critical in this population to prevent recurrent ischemic events and reduce mortality. This review summarizes current evidence on the choice of antiplatelet therapy in patients with AMI managed without PCI, including dual antiplatelet therapy (DAPT) options, the duration of therapy, and considerations for bleeding risk. Recent randomized controlled trials and guideline recommendations are discussed.

Keywords: acute myocardial infarction, non-PCI, antiplatelet therapy, dual antiplatelet therapy, conservative management.

1. Introduction

Acute myocardial infarction is a major cause of cardiovascular morbidity and mortality worldwide [1]. Early reperfusion with PCI significantly improves outcomes; however, in real-world practice, up to 20–30% of AMI patients are treated conservatively without PCI due to factors such as high procedural risk, advanced age, comorbidities, or delayed presentation [2].

In these patients, antiplatelet therapy plays a pivotal role in secondary prevention, reducing the risk of recurrent myocardial infarction, stroke, and cardiovascular death. The selection of appropriate antiplatelet agents and the duration of therapy must balance ischemic risk against bleeding risk [3].

2. Rationale for Antiplatelet Therapy in Non-PCI AMI

Platelet activation and aggregation are central to thrombus formation in AMI. Antiplatelet therapy inhibits this process and reduces recurrent ischemic events. Current approaches include:

- **Aspirin:** Irreversible cyclooxygenase-1 inhibitor; cornerstone of therapy.
- **P2Y12 inhibitors:** Clopidogrel, prasugrel, or ticagrelor. These agents inhibit ADP-mediated platelet activation.
- **Dual antiplatelet therapy (DAPT):** Combination of aspirin and a P2Y12 inhibitor is standard in AMI [4].

In conservatively managed AMI, DAPT has been shown to reduce recurrent myocardial infarction and cardiovascular death compared to aspirin alone, but with an increased risk of bleeding [5].

3. Evidence from Clinical Trials

3.1 Clopidogrel-based DAPT

The **CLARITY-TIMI 28** and **COMMIT** trials demonstrated that clopidogrel added to aspirin reduced the composite of death, reinfarction, or stroke in patients with ST-elevation myocardial infarction (STEMI) managed without PCI [6,7].

- COMMIT: Clopidogrel 75 mg daily in addition to aspirin reduced the risk of reinfarction (RR 0.77) and death (RR 0.91) but increased minor bleeding events.
- Benefits were consistent across age and gender subgroups.

3.2 Ticagrelor in Non-PCI AMI

The **PLATO** trial included a prespecified subgroup of patients managed without early invasive intervention. Ticagrelor plus aspirin significantly reduced the risk of cardiovascular death, myocardial infarction, or stroke compared with clopidogrel plus aspirin (HR 0.83, 95% CI 0.73–0.95) without a significant increase in major bleeding [8].

3.3 Prasugrel in Non-PCI AMI

Data on prasugrel in non-PCI patients are limited. Trials such as **TRITON-TIMI 38** mainly included PCI populations; prasugrel is generally **not recommended** in conservatively managed AMI due to limited evidence and higher bleeding risk [9].

4. Duration of Antiplatelet Therapy

Current guidelines recommend **12 months of DAPT** for most patients with AMI, including those managed without PCI, unless contraindicated by high bleeding risk [4,10].

- Shorter durations (3–6 months) may be considered in high bleeding risk patients.
- Long-term aspirin therapy is recommended indefinitely.

Figure 1 (conceptual): Duration of DAPT based on ischemic vs. bleeding risk in non-PCI AMI. *High ischemic, low bleeding risk → 12 months;*

High bleeding risk → 3–6 months; Adjust based on clinical context.

5. Special Considerations

- **Elderly patients:** Higher bleeding risk; clopidogrel often preferred over more potent P2Y12 inhibitors.
- **Renal impairment:** Dose adjustments and careful monitoring recommended.
- **Drug interactions:** Avoid concomitant use of strong CYP3A4 inhibitors with ticagrelor.

Shared decision-making considering ischemic and bleeding risks is essential.

6. Guideline Recommendations

European Society of Cardiology (ESC) 2020 guidelines:

- Aspirin + P2Y12 inhibitor for 12 months in all AMI patients unless contraindicated [4].

- Clopidogrel recommended if bleeding risk is high or if ticagrelor/prasugrel contraindicated.

American College of Cardiology/American Heart Association (ACC/AHA) 2023 update:

- Similar recommendations; emphasizes DAPT for conservatively managed STEMI/NSTEMI patients [10].

7. Conclusion

For patients with AMI managed conservatively without PCI, **DAPT with aspirin plus a P2Y12 inhibitor (clopidogrel or ticagrelor)** remains the standard of care. Ticagrelor may offer superior ischemic protection, while clopidogrel remains an effective alternative for patients at high bleeding risk. Therapy should be maintained for 12 months, with adjustments for bleeding risk, comorbidities, and patient preferences. Further studies are warranted to optimize therapy in specific subpopulations such as the elderly and those with chronic kidney disease.

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