

Highlights of the NSTEMI panel discussion video

ACS in Action is an eLearning website in Hong Kong which features online modules focused on Acute Coronary Syndrome (ACS) management. The website aims to encourage knowledge and experience sharing across disciplines for the betterment of ACS management in Hong Kong.

ACS in Action features a patient journey video based on a real non-ST-elevation myocardial infarction (NSTEMI) case and a panel discussion on NSTEMI. The following is a summary of the NSTEMI panel discussion. The full video is available at <http://acsinaction.org>.

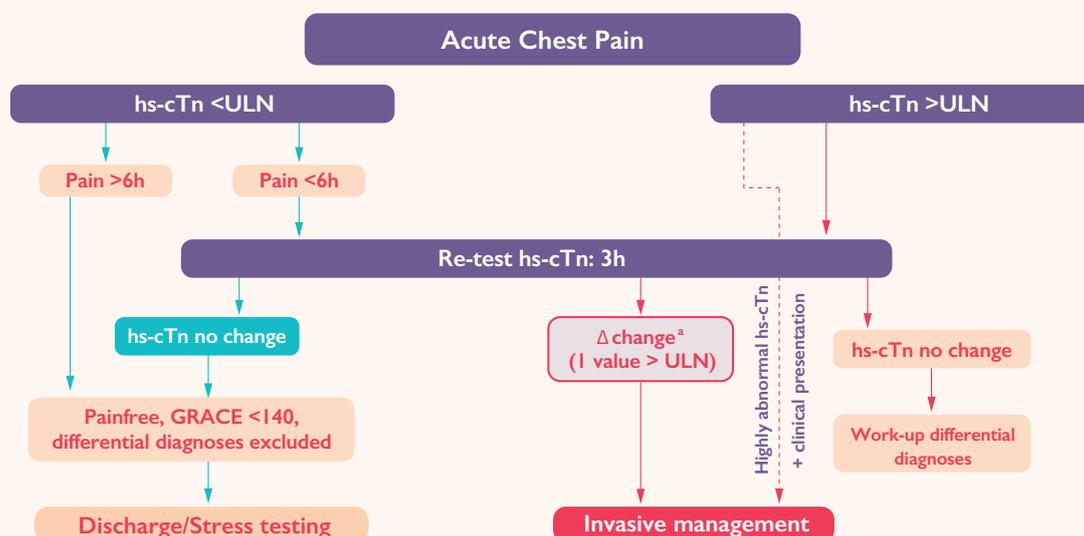
Diagnosis

Typical symptoms of NSTEMI are angina radiating to the left arm, neck or jaw, sweating, abdominal pain, dyspnoea and syncope.¹ It is important to remember that ECG is not always indicative of MI and may be normal in one-third of patients.¹ If ECG results are inconclusive, the high-sensitivity cardiac troponin (hs-cTn) assay can be of high diagnostic value and can be applied before making treatment decisions.¹ The higher the level of hs-cTn, the greater the likelihood of MI¹:

- Elevations beyond the 5-fold the upper reference limit have high (>90%) positive predictive value for acute type 1 MI
- Elevations up to 3-fold the upper reference limit have only limited (50-60%) positive predicative value for acute MI and may be associated with a broad spectrum of conditions

The hs-cTn assay should be done on admission and retested after 3 hours.¹ The change in hs-cTn between 0/3 hours can be used to rule-in or rule-out NSTEMI and decide on a management strategy (Figure 1).¹

FIGURE 1. 0/3-hour rule-in/rule out algorithm of NSTEMI using hs-cTn assay¹



GRACE = Global Registry of Acute Coronary Events score; hs-cTn = high sensitivity cardiac troponin; ULN = upper limit of normal, 99th percentile of healthy controls.

^aΔchange, dependent on assay. Highly abnormal hsTn defines values beyond 5-fold the upper limit of normal.

Risk stratification

The treatment course for patients diagnosed by NSTEMI should be based on the patient's clinical condition and risk of mortality. In their NSTEMI guideline, the European Society of Cardiology (ESC) has established risk criteria (Figure 2) and corresponding time targets for invasive management (Figure 3).¹

FIGURE 2. Risk criteria mandating an invasive strategy in NSTEMI.¹

Very-high-risk criteria

- Haemodynamic instability or cardiogenic shock
- Recurrent or ongoing chest pain refractory to medical treatment
- Life-threatening arrhythmias or cardiac arrest
- Mechanical complications of MI
- Acute heart failure
- Recurrent dynamic ST-T wave changes, particularly with intermittent ST-elevation

High-risk criteria

- Rise or fall in cardiac troponin compatible with MI
- Dynamic ST- or T-wave changes (symptomatic or silent)
- GRACE score >140

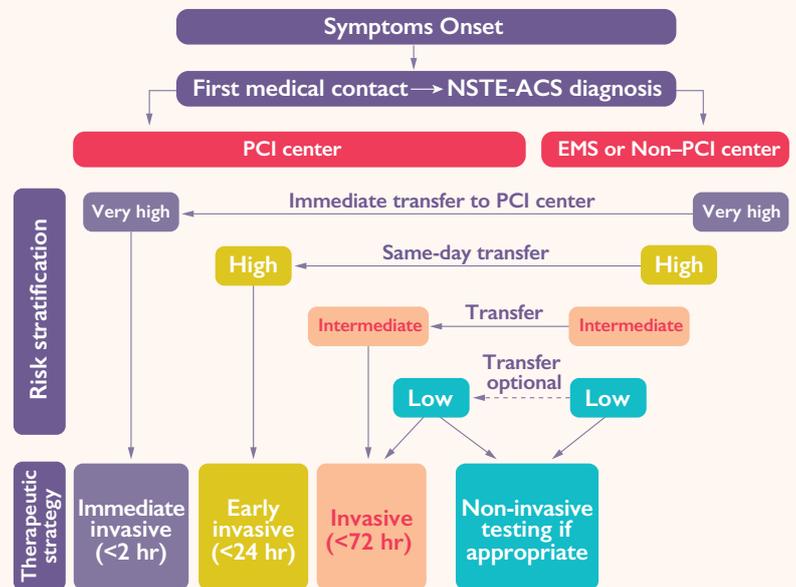
Intermediate-risk criteria

- Diabetes mellitus
- Renal insufficiency (eGFR <60mL/min/1.73 m²)
- LVEF <40% or congestive heart failure
- Early post-infarction angina
- Prior PCI
- Prior CABG
- GRACE risk score >109 and <140

Low-risk criteria

- Any characteristics not mentioned above

FIGURE 3. Selection of NSTEMI treatment strategy and timing according to initial risk stratification.¹



EMS = emergency medical services; PCI = percutaneous coronary intervention.

Medication in the acute phase

Patient should be given acute pharmacological treatment shortly after diagnosis of NSTEMI.¹ Aspirin and a P2Y₁₂ inhibitor is recommended unless there are contraindications such as excessive risk of bleeds.¹ Ticagrelor is the recommended P2Y₁₂ inhibitor for all patients at moderate- to high risk of ischaemic events, regardless of initial treatment strategy and including those pretreated with clopidogrel.¹ Switching from

clopidogrel to ticagrelor is also recommended early after hospital admission at a loading dose of 180 mg irrespective of timing and loading dose of clopidogrel.³ Anticoagulants, statins, beta-blockers, angiotensin converting enzyme inhibitors (ACEI)/angiotensin receptor blockers (ARB), antianginal agents, proton pump inhibitors and stool softeners should also be given.¹

Long-term management

Long-term mortality is higher in patients with NSTEMI than STEMI; in one study the 1-year mortality in NSTEMI patients was 27% vs. 14% in STEMI.¹ Therefore, the long-term risk for these patients should not be overlooked. Lifelong aspirin is indicated if there are no

contraindications.² DAPT in the form of aspirin and a potent P2Y₁₂ inhibitor should be given for at least 12 months in patients without a high bleeding risk.¹ Extended treatment with ticagrelor beyond 12 months can be considered for up to 3 years in high-risk patients.¹

SUMMARY



- Diagnose NSTEMI using the rapid rule-in/rule-out protocol
- Assess risk to establish the optimal timing for catheterization
- Acute medical therapy should include:
 - DAPT (aspirin and a potent P2Y₁₂ inhibitor)
 - Anticoagulants
 - Statins, beta-blockers, ACEI/ARB inhibitors

- Antianginal agents
- Proton pump inhibitor and stool softener
- DAPT with a potent P2Y₁₂ inhibitor should be given for 12 months
- Switching from clopidogrel to ticagrelor after early hospital admission phase
- Lifelong aspirin is indicated if there are no contraindications
- Consider extended treatment with ticagrelor beyond 12 months in high-risk patients

REFERENCES

1. Roffi M, et al. *Eur Heart J* 2016;37:267-315.
2. Saaby L, et al. *Eur Heart J* 2013;34:P1341.
3. Vagimigli M, et al. *Eur Heart J* 2018;39:213-254.

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