

Treatment–Risk Discordance in Patients with Non–ST Elevation Acute Coronary Syndromes

Yan AT, Yan RT, Yan MT, et al. Management patterns in relation to risk stratification among patients with non–ST elevation acute coronary syndrome. *Arch Intern Med* 2007;167:1009–16.

Study Overview

Objective. To examine the use of in-hospital cardiac catheterization and medications in relation to risk among patients with non–ST elevation (NSTEMI) acute coronary syndromes (ACS).

Design. Retrospective cohort study.

Setting and participants. Patients were part of the Canadian ACS registries and were eligible if they were aged ≥ 18 years at presentation, admitted with a suspected ACS (defined by symptoms consistent with acute cardiac ischemia within 24 hours of onset), and ACS was not accompanied by another serious concurrent illness. The study focused on patients with NSTEMI ACS who did not have ST-segment elevation ≥ 0.1 mV in ≥ 2 contiguous leads on admission electrocardiograms. The ACS1 (conducted from 1 September 1999–30 June 2001) and ACS2 (conducted from 1 October 2002–31 December 2003) registries were used; the 2 registries had 51 and 36 participating hospitals, respectively. The final study cohort included 4854 patients who were stratified into low-, intermediate-, and high-risk categories based on the Global Registry of Acute Coronary Events (GRACE) risk score.

Main outcome measures. Cardiac catheterization and revascularization performed during index hospitalization.

Main results. In-hospital mortality was similar over time; however, the use of cardiac catheterization increased significantly, from 38.8% in the ACS1 registry to 63.5% in the ACS2 registry ($P < 0.001$). The rates of cardiac catheterization in the low-, intermediate-, and high-risk groups were 48%, 41.1%, and 27.3% in the ACS1 registry and 73.8%, 66.9%, and 49.7% in the ACS2 registry, respectively ($P < 0.001$ for both). High- and intermediate-risk patients were still less likely to undergo cardiac catheterization as compared with low-risk patients after adjusting for confounding factors. An inverse relationship was observed between risk and use of revascularization procedures and medications.

Conclusion. Lower-risk patients with NSTEMI ACS are more

likely to receive cardiac catheterization and revascularization procedures despite recommendations of early invasive management for high-risk patients.

Commentary

Although the use of invasive cardiac procedures has increased over the past decade [1] and randomized clinical trials have supported the use of an early invasive clinical strategy in patients with NSTEMI ACS [2,3], recent studies called into question the translation of this strategy into actual clinical practice and have shown that higher rates of catheterization are not associated with better outcomes [4,5]. The study by Yan et al found that although use of invasive cardiac procedures has increased, higher-risk patients with NSTEMI ACS do not receive these procedures as often as lower-risk patients despite possibly being the population that might benefit the most. These results suggest that resource utilization and delivery of care for high-risk patients may be suboptimal.

This study used the GRACE score, an externally validated instrument for risk stratification, to classify mortality risk. This score is beneficial because it uses administrative data as well as hemodynamic, electrocardiographic, and biomarker results in score calculation. However, the extent to which the GRACE risk score correlates to clinical judgment has not been established, which might explain the discrepancy between invasive treatment and risk. For instance, most physicians do not use a risk score to determine how to treat patients with NSTEMI ACS and therefore traditional risk scores may not capture other clinical variables that factor into the decision to treat invasively. That being said, higher-risk patients are most likely to experience an adverse event as a result of invasive management, and therefore the physician may presume that the risk-benefit ratio is too high to warrant aggressive treatment.

The treatment–risk paradox is an interesting phenomenon that warrants further study. On one hand, risk scores identify a population that could benefit from more aggressive management; however, risk scores may be underused or current risk adjustment models may not fully take into account variables physicians use to make clinical judgments, such as functional capacity.

Applications for Clinical Practice

High-risk NSTEMI ACS patients do not receive invasive procedures or pharmacologic therapies as often as their low-risk counterparts and are a potentially underserved population for aggressive management. However, risk scores do not substitute for clinical judgment, and most likely there were factors not captured by the GRACE risk score in this study that influenced the decision for invasive management.

—Review by Robert L. Huang, MD, MPH

References

1. Alter, DA, Stukel TA, Newman A. Proliferation of cardiac technology in Canada: a challenge to the sustainability of Medicare. *Circulation* 2006;113:380–7.
2. Cannon CP, Weintraub WS, Demopoulos LA, et al. Comparison of early invasive and conservative strategies in patients with unstable coronary syndromes treated with the glycoprotein IIb/IIIa inhibitor tirofiban. *N Engl J Med* 2001;344:1879–87.
3. Fox KA, Poole-Wilson PA, Henderson RA, et al. Interventional versus conservative treatment for patients with unstable angina or non-ST-elevation myocardial infarction: the British Heart Foundation RITA 3 randomised trial. *Randomized Intervention Trial of unstable Angina. Lancet* 2002;360:743–51.
4. Stukel TA, Lucas FL, Wennberg DE. Long-term outcomes of regional variations in intensity of invasive vs medical management of Medicare patients with acute myocardial infarction. *JAMA* 2005;293:1329–37.
5. Van de Werf F, Gore JM, Avezum A, et al. Access to catheterisation facilities in patients admitted with acute coronary syndrome: multinational registry study. *BMJ* 2005;330:441.

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