



STUDY OF LIPID PROFILE TESTING AND TREATMENT AFTER ACUTE MYOCARDITIS

Biochemistry

Dr. Javed Bakas Mulla

Professor&Head, Dept.of Biochemistry, PTJLN Government Medical College &Hospital, Chamba, 176310 Himachal Pradesh, India

Mr. Alfaj Sadik Mulani

Post Graduate student, Dept.of Biochemistry, Bharati Vidyapeeth Medical College& Hospital, Sangli, Maharashtra, India

ABSTRACT

Background And Aims: To assess the compliance with national guidelines regarding lipid profiling and the prescribing of high-intensity lipid-lowering therapy in patients admitted with ACS. **Methods:** In a study at PTJLN GMCH CHAMBA from January to May 2023, researchers focused on patients with type 1 heart attacks. They excluded older patients and those with heart failure. They reviewed patient records and data, recorded cholesterol measurements and medications, educated hospital staff, and presented their findings. They used statistical tests to compare results between audit cycles and ensured patient data privacy. **Results:** A pilot study (cycle one) checked how well our cardiology department followed NICE guidelines for heart disease prevention through lipid modification. We made improvements through various interventions. A follow-up study (cycle two) assessed the impact of these changes. **Conclusion:** Pre-statin lipid measurements are valuable for guiding post-heart attack treatment but are often neglected, even in leading cholesterol management centers. Efforts are needed to improve lipid testing. In most cases, high-efficacy lipid-lowering therapy is initiated promptly following established guidelines. While statins are primary, non-statin drugs like ezetimibe and PCSK9 inhibitors may be considered for high-risk patients.

KEYWORDS

Lipids, Myocardial Infarction, Cardiovascular Diseases.

INTRODUCTION

Triglycerides and total cholesterol are key risk factors for atheroma and coronary heart disease. High-intensity lipid-lowering therapy, primarily with statins, is crucial for secondary cardiovascular disease prevention. Initiating high-intensity therapy early during hospital admission for acute myocardial infarction is emphasized by NICE guidelines. A 40 mg/dL reduction in LDL-C is associated with a 22% reduction in cardiovascular disease risks. Lipid profiles should be obtained at admission and rechecked after 12 weeks for ACS patients. Glasgow Royal Infirmary should strive for 100% cholesterol screening in AMI patients. We conducted an audit in our cardiology department to assess lipid profiling adherence to NICE guidelines, focusing on two standards: obtaining lipid profiles within 24 hours of admission and prescribing high-efficacy lipid-lowering therapy post-myocardial infarction based on patient tolerance and comorbidities.

AIM:

To assess the compliance with national guidelines regarding lipid profiling and the prescribing of high-intensity lipid-lowering therapy in patients admitted with ACS.

Study Design- Analytic observation study.

Inclusion Criteria-

- Only patients fulfilling the criteria for a type 1 myocardial infarction were included.

Exclusion Criteria-

- Patients aged 80 years and over were also excluded

METHOD:

In a study at PTJLN GMCH CHAMBA from January to May 2023, researchers focused on patients with type 1 heart attacks. They excluded older patients and those with heart failure. They reviewed patient records and data, recorded cholesterol measurements and medications, educated hospital staff, and presented their findings. They used statistical tests to compare results between audit cycles and ensured patient data privacy. Results: A pilot study (cycle one) checked how well our cardiology department followed NICE guidelines for heart disease prevention through lipid modification. We made improvements through various interventions. A follow-up study (cycle two) assessed the impact of these changes.

Statistical Methods:

Report here the results of our statistical tests. Refer explicitly to the hypotheses being tested by number: H1, H2, and so on. In most cases, our data should report tabulations of statistics. We have use ordinal or continuous data statistically involve correlation coefficients,

regression coefficients, or results of t-tests or F-tests. The data are in the table; the text should be used to summarize its particulars. "All but one of the correlations in Table 1 are in the expected direction and are statistically significant."

RESULTS:

Cycle One: A total of 145 patients with acute coronary syndrome (ACS) were admitted during this period. Only 55% had their total cholesterol (TC) checked during admission, and 46% had TC measured within the first 24 hours of admission. A full lipid profile was ordered for 32% of patients, including TC, triglycerides (TG), high-density lipoprotein cholesterol (HDL-C), and low-density lipoprotein cholesterol (LDL-C). Compliance with Standard One (measuring TC within 24 hours of admission) and Standard Two (prescribing high-efficacy lipid-lowering therapy) was suboptimal. **Cycle Two:** In this period, 180 patients with ACS were admitted. 64% had TC measured during admission, and 61% had TC checked within the first 24 hours. A full lipid profile was measured for 36% of patients. Despite improvements, a significant number of patients did not have any lipid measurements, especially those under 55 years old. There was a statistically significant increase in the number of patients having their TC measured within the first 24 hours after implementing an intervention.

Table 1. Patient demographics across both cycles

Age group (years)	Cycle one		Cycle two	
	Male	Female	Male	Female
< 45	6	4	12	2
45-54	15	4	21	9
55-64	34	11	48	24
65-74	24	8	17	15
75-80	20	19	17	15
Total	99	46	115	65

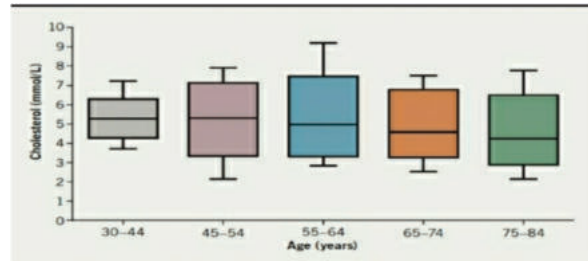


Figure 1. Patient cholesterol levels measured during admission in cycle two

DISCUSSION:

This study focused on evaluating the adherence of a city hospital's cardiology department to national guidelines for lipid screening and secondary prevention in patients with acute coronary syndrome (ACS). The study was conducted in two phases during 2022. In the initial phase, it was observed that about half of the patients did not have their cholesterol levels measured before discharge, and less than half had it checked within the recommended 24 hours of admission, indicating non-compliance with guidelines. Following staff education, the second phase showed an improvement in cholesterol measurement within 24 hours, although further efforts are needed to maintain this change. Compliance with guidelines regarding cholesterol measurement during ACS admission remained poor, reflecting a lack of adherence to NICE and ESC guidelines. The study also noted a discrepancy between patients who received a complete lipid profile (total cholesterol, triglycerides, HDL-C, and LDL-C) and those who had only total cholesterol measured. While encouraging the full lipid profile is important, measuring total cholesterol alone meets the basic guideline standards. However, not measuring HDL-C and TG means that patients with low HDL-C and high cardiovascular risk, which is common in the West of Scotland, may go unnoticed. One concerning finding was that some young ACS patients were not screened for cholesterol, highlighting the importance of early identification for further investigation, management, and family member screening. Regarding secondary prevention, good compliance was seen in prescribing high-dose statins (Standard Two). However, some patients did not meet these standards (7%), often due to issues like suboptimal dosing or documented statin intolerance. The study also pointed out inadequate prescribing of ezetimibe, despite the strong evidence base and clear NICE guidance on its use, even when experts in the field were present within the department.

CONCLUSIONS:

Measuring cholesterol levels before starting statin treatment is crucial for predicting patient outcomes after a heart attack. Unfortunately, many patients admitted with heart attacks aren't receiving this important test, even in a hospital that should excel in cholesterol management. We need to work on making consistent improvements in cholesterol testing for these patients. As part of this effort, we plan to include cholesterol tests in the standard blood work for patients with chest pain and elevated troponin levels. Fortunately, most patients are promptly started on high-intensity cholesterol-lowering treatment when admitted with a heart attack, following NICE guidelines. While statins are the primary treatment, some high-risk patients may need additional non-statin medications like ezetimibe or emerging drugs called PCSK9 inhibitors to further reduce cholesterol levels.

REFERENCES

1. Cao X, Ejzykowicz F, Ramey D *et al.* Impact of switching from high-efficacy lipid-lowering therapies to generic simvastatin on LDL-C levels and LDL-C goal attainment among high-risk primary and secondary prevention populations in the United Kingdom. *Clin Ther* 2015; **37**:80415. <https://doi.org/10.1016/j.clinthera.2014.12.019>
2. Waters DD, Guyton JR, Herrington DM *et al.* Treating to New Targets (TNT) study: does lowering low-density lipoprotein cholesterol levels below currently recommended guidelines yield incremental clinical benefit? *Am J Cardiol* 2004; **93**:154–8. <https://doi.org/10.1016/j.amjcard.2003.09.031>
3. Cannon CP, Blazing MA, Giugliano RP *et al.* Ezetimibe added to statin therapy after acute coronary syndromes. *N Engl J Med* 2015; **372**:2387–97. <https://doi.org/10.1056/NEJMoa1410489>
4. Bohula EA, Morrow DA, Cannon CP *et al.* Atherothrombotic risk stratification and ezetimibe use in IMPROVE-IT. *J Am Coll Cardiol* 2017; **69**:911–21. <https://doi.org/10.1016/j.jacc.2016.11.070>
5. Hlatky MA, Kazi DS. PCSK9 inhibitors: economics and policy. *J Am Coll Cardiol* 2017; **70**:2677–87. <https://doi.org/10.1016/j.jacc.2017.10.001>
6. National Institute for Health and Care Excellence. Lipid modification – CVD prevention. London: NICE, 2015. Available from: <https://cks.nice.org.uk/lipid-modification-cvd-prevention> [accessed 1 February 2019].
7. European Association for Cardiovascular Prevention & Rehabilitation, Reiner Z, Catapano AL *et al.* ESC/EAS Guidelines for the management of dyslipidaemias: the Task Force for the management of dyslipidaemias of the European Society of Cardiology (ESC) and the European Atherosclerosis Society (EAS). *Eur Heart J* 2011; **32**:1769–818. <https://doi.org/10.1093/eurheartj/ehr158>
8. Assessing opinion on lower LDL-cholesterol lowering, and the role of newer lipid-reducing treatment options May (2023) *Br J Cardiol* 2023; **30**(2)
9. British Heart Foundation. Why should you have your cholesterol tested? Heart Matters. Available at: <https://www.bhf.org.uk/informationsupport/heart-matters-magazine/medical/tests/bloodcholesterol> [accessed 24 July 2018].
10. National Institute for Health and Care Excellence. Ezetimibe for treating primary heterozygous-familial and non-familial hypercholesterolaemia. London: NICE, 2016. Available from: <https://www.nice.org.uk/guidance/ta385> [accessed 15 May 2019].