

Myocardial Infarction: An Overview

Vincent Auffret*

Department of Cardiology and Vascular Diseases, Pontchaillou University Hospital, University of Rennes, Rennes, France

Commentary

A myocardial infarction (MI), often known as a heart attack, occurs when blood flow to the coronary artery of the heart is reduced or stopped, resulting in damage to the heart muscle. Chest pain or discomfort is the most prevalent symptom, which might spread to the shoulder, arm, back, neck, or jaw [1]. It usually happens in the center or left side of the chest and lasts for several minutes. It's possible that the discomfort will feel like heartburn at times. Shortness of breath, nausea, dizziness, faintness, a cold sweat, or exhaustion is some of the other symptoms. Atypical symptoms affect about 30% of persons. Women are more likely to present with neck discomfort, arm pain, or fatigue rather than chest pain. About 5% of those over the age of 75 have experienced a MI with little or no prior symptoms [2]. Heart failure, irregular heartbeat, cardiogenic shock, or cardiac arrest can all result from a MI.

Ischemia, or a shortage of oxygen flow to myocardial tissue, causes tissue death (infarction) of the heart muscle (myocardium). It's a form of acute coronary syndrome that explains a change in symptoms connected to blood flow to the heart that occurs suddenly or over a short period of time [3]. A myocardial infarction, unlike the other type of acute coronary syndrome, unstable angina, happens when there is cell death, which can be measured by a blood test for biomarkers (the cardiac protein troponin). Based on the results of an ECG, a MI can be characterised as a ST elevation myocardial infarction (STEMI) or a Non-ST elevation myocardial infarction (NSTEMI) [4].

Acute myocardial infarction, often known as a heart attack, is a potentially fatal disorder that happens when blood flow to the heart muscle is cut off suddenly, causing tissue damage. A blockage in one or more of the coronary arteries is frequently the cause [5]. A blockage can arise as a result of plaque buildup, which is mostly composed of fat, cholesterol, and cellular waste materials, or as a result of a blood clot forming on the obstruction.

The treatment of a MI is time-sensitive. For a suspected MI, aspirin is an appropriate initial treatment. Although nitroglycerin and opioids can aid with chest pain, they do not enhance overall results. Those with low oxygen levels or shortness of breath should take extra oxygen [6]. Treatments for STEMI include percutaneous coronary intervention (PCI), which involves pushing the arteries open and possibly stenting them, or thrombolysis, which involves removing the blockage with medicines. People with a non-ST elevation myocardial infarction (NSTEMI) are frequently treated with the blood thinner heparin, with PCI used in high-risk patients. Coronary artery bypass surgery (CABG) may be advised instead of angioplasty in persons with numerous coronary artery blockages and diabetes. Following a MI, lifestyle changes are usually recommended, as well as long-term treatment with aspirin, beta blockers, and statins.

Risk factors

Older age, active smoking, high blood pressure, diabetes mellitus, and

total cholesterol and high-density lipoprotein levels are the most common risk factors for myocardial infarction. Many risk factors for myocardial infarction, such as male sex, low levels of physical activity, a history of myocardial infarction in the family, obesity, and alcohol consumption, are shared with coronary artery disease, the major cause of myocardial infarction. Myocardial risk factors are frequently included in risk factor stratification scores like the Framingham Risk Score. Men are more likely than women to develop cardiovascular disease at any given age. High blood cholesterol levels, particularly high low-density lipoprotein, low high-density lipoprotein, and high triglycerides, are known risk factors.

Many risk factors for myocardial infarction can be changed, the most important of which being cigarette use (including secondhand smoke). Smoking appears to be the cause of roughly 36% of coronary artery disease, while obesity appears to be the cause of 20%. 7–12% of instances have been connected to a lack of physical activity. Stress-related reasons such as job stress, which accounts for roughly 3% of cases, and chronic high stress levels, are less common [8].

Symptoms of myocardial infarction

While chest discomfort and shortness of breath are the most common symptoms of a heart attack, the symptoms can be extremely variable [9]. The most common signs and symptoms of a heart attack are as follows: Source you can trust:

- Chest pressure or tightness
- Pain in the chest, back, jaw, or other upper-body areas that lasts more than a few minutes or goes away and returns back
- Sweating
- Nausea
- Vomiting
- Shortness of breath
- Nervousness
- Feeling like you're about to pass out
- A racing heart
- A sense of impending doom.

Types of myocardial infarctions

An ST-elevation MI (STEMI) or a non-ST elevation MI (NSTEMI) is the most common clinical classification for a myocardial infarction (NSTEMI). These are based on ST elevation, which is a visual representation of a part of a heartbeat recorded on an ECG. STEMI account for 25–40% of all myocardial infarctions. There is also a more explicit classification system that was developed in 2012 based on international consensus [10]. There are five types of myocardial infarctions according to this classification:

1. Acute MI caused by plaque erosion, rupture, fissuring, or dissection.
2. MI caused by ischemia, such as coronary artery spasm, coronary embolism, anaemia, arrhythmias, high blood pressure, or low blood pressure, e.g., coronary artery spasm, coronary embolism, anaemia, arrhythmias, high blood pressure, or low blood pressure
3. Sudden unexpected cardiac death, including cardiac arrest, in which symptoms suggest MI, an ECG shows suggestive changes, or a blood clot is discovered in a coronary artery by angiography and/or autopsy,

*Address for Correspondence: Vincent Auffret, Department of Cardiology and Vascular Diseases, Pontchaillou University Hospital, University of Rennes, Rennes, France, E-mail: auffretv@gmail.com

Copyright: © 2022 Auffret V. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Received 4 January, 2022, Manuscript No. jcd-22-53062; Editor assigned: 6 January, 2022, PreQC No. P-53062; QC No. Q-53062; Reviewed: 18 January, 2022, Revised: 24 January, 2022, Manuscript No. R-53062; Published: 31 January, 2022, DOI: 10.37421/2329-9517.22.10.477

but blood samples were not obtained, or in which cardiac biomarkers in the blood have not yet appeared.

4. Associated with angioplasty or stents in the coronary arteries

- It's linked to a procedure called percutaneous coronary intervention (PCI)
- Found to be linked to stent thrombosis, as evidenced by angiography or autopsy.

5. Associated with CABG

6. Associated with spontaneous coronary artery dissection in young, fit women.

References

1. J.S. Alpert, Thygesen, K., Antman, E. and, J.P. Bassand. "Myocardial Infarction Redefined—A Consensus Document of The Joint European Society of Cardiology/ American College of Cardiology Committee for the Redefinition of Myocardial Infarction." *J Am College Cardiol* 36 (2000): 959-969.
2. Mozaffarian, D., Benjamin, E.J., Go, A.S., Arnett, D.K., and et al. "Heart Disease and Stroke Statistics—2015 Update: A Report from the American Heart Association." *Circulation* 131 (2015): e29-322.
3. Thygesen, K., Alpert, J.S., Jaffe, A.S., Simoons, M.L., and et al. "On Behalf of the Joint ESC/ACCF/AHA/WHF Task Force for the Universal Definition of Myocardial Infarction (2012) Third Universal Definition of Myocardial Infarction." *J Am College Cardiol* 60 (2007): 1581-1598.
4. Mihatov, N., Januzzi Jr., J.L. and Gaggin, H.K. "Type 2 Myocardial Infarction due to Supply-Demand Mismatch." *Trends Cardiovasc Med* 27 (2017): 408-417.
5. Smilowitz, N.R., Weiss, M.C., Mauricio, R., Mahajan, A.M., Dugan, K.E., and et al. "Provoking Conditions, Management and Outcomes of Type 2 Myocardial Infarction and Myocardial Necrosis." *Int J Cardiol* 218 (216): 196-201.
6. Gregg, R.E. and Babaeizadeh, S. "Detection of Culprit Coronary Lesion Location in Pre-Hospital 12-Lead ECG." *J Electrocardiol* 47 (2014): 890-894.
7. Ishida, M., Kato, S. and Sakuma, H. "Cardiac MRI in Ischemic Heart Disease." *Circulation J* 73 (2009): 1577-1588.
8. Manari, A., Albiero, R. and De Servi, S. "High-Risk Non-ST-Segment Elevation Myocardial Infarction versus ST-Segment Elevation Myocardial Infarction: Same Behaviour and Outcome?" *J Cardiovasc Med* 10 (2009): S13-S16.
9. Brodie, B.R., Hansen, C., Stuckey, T.D., and Richter, S., et al. "Door-to-Balloon Time with Primary Percutaneous Coronary Intervention for Acute Myocardial Infarction Impacts Late Cardiac Mortality in High-Risk Patients and Patients Presenting Early after the Onset of Symptoms." *J Am Coll Cardiol* 47 (2006): 289-295.
10. Kent, D.M., Schmid, C.H., Lau, J. and Selker, H.P. "Is Primary Angioplasty for Some as Good as Primary Angioplasty for All?" *J General Int Med* 17 (2002): 887-894.

How to cite this article: Auffret, Vincent. "Myocardial Infarction: An Overview." *J Cardiovasc Dis Diagn* 10 (2022): 477.