Libyan Journal of Medical Research

www.ljmr.ly/ eISSN:2413-6096

Case Report Article

Incessant ventricular tachycardia and Multi-organ failure after inferior STEMI due to Right coronary artery occlusion.

Ahmed Abdelrasol[1,2], Ruwaydah A Ali [1,2] Omar M Farag [1,2] Marwah M. Aeteewah [1,2], Ahmed s Mikael[2]

1.Faculty of Medicine, Tobruk University, Tobruk, Libya

2.Medical Technology laboratory debarment of Tobruk Medical Center, Tobruk, Libya

Corresponding author Ahmed s Mikael : ahmedradology@gmail.com.

Received: 30/11/2024 | Accepted: 15/01/2025 | Published: 22/01/25| DOI: https://doi.org/10.26719/ .19.1.4

Abstract

Inferior wall myocardial infarction (STEMI) is commonly associated with hemodynamic instability and conduction disturbances; however, incessant ventricular tachycardia (VT) as a complication is rare. We report a case of a 66-year-old male with inferior STEMI due to right coronary artery (RCA) occlusion, who developed incessant monomorphic VT, cardiogenic shock, and subsequent multi-organ failure. Despite initial medical therapy, including dual antiplatelet therapy (DAPT), statins, and anticoagulation, the patient's arrhythmia persisted, necessitating urgent percutaneous coronary intervention (PCI). Post-PCI, the patient experienced cardiogenic shock complicated by acute renal failure, ischemic hepatitis, disseminated intravascular coagulation (DIC), and required hemodialysis. Intensive critical care measures, including mechanical ventilation and renal replacement therapy, led to clinical improvement, and the patient was discharged after 18 days, hemodynamically stable with restored organ function.

This case highlights the potential for life-threatening complications following inferior STEMI, even with preserved left ventricular function. The management underscores the importance of early recognition, prompt revascularization, and advanced cardiovascular and critical care resources to optimize outcomes. Comprehensive post-acute management, including long-term follow-up and secondary prevention, is vital to reduce recurrence and improve patient prognosis. This case emphasizes the need for a multidisciplinary approach and advanced care infrastructure in managing severe complications of inferior STEMI.

Keywords: Inferior STEMI, Right coronary artery occlusion , Ventricular tachycardia, Cardiogenic shock ,Multi-organ failure ,Percutaneous coronary intervention (PCI)

INTRODUCTION:

Inferior wall myocardial infarction can lead to various complication including RV infarct, sinus bradycardia and atrioventricular conduction blocks, however ventricular tachycardia is an uncommon complication of inferior wall myocardial infarction in this report we present a case of inferior wall myocardial infarction due to Right coronary artery occlusion that progressed to ventricular tachycardia, cardiogenic shock and subsequent multi-organ failure[1].

Case Presentation: A 66-year-old male patient, heavy smoker with no significant past medical history was admitted to the coronary care unit presented with chest pain started three days before admission. At admission an initial ECG shows ST elevation and Q wave in the inferior leads, Echo revealed preserved LV function, ejection fraction 55% With hypokinesia of inferior, posterior and right ventricular free wall, small pericardial effusion, he was giving DAPT, Statin and un-fractioned heparin infusion was started without Fibrinolytic due to time constraints and the chest pain relieved , on the sixth day of admission the patient developed incessant sustained monomorphic ventricular tachycardia with cardiac arrest three times and received DC shock , Amiodarone and Lidocaine were used but failed to terminate the arrhythmia That sustained for 8 hours before he underwent an urgent coronary angiography and the ventricular tachycardia persisted during the procedure that Lasted for 90 min . The angiography showed complete occlusion of the Mid right coronary artery and PCI with 2 DES Was Done with TIMI 3 flow. After the angiography has done, the patient transferred to CCU and arrested again, resuscitated and connected to MV, sinus rhythm was restored, Then developed cardiogenic shock due to RV infarct that complicated by multi-organ failure (acute renal failure, ischemic hepatitis, DIC) and hemodialysis for four days, After 18 days the patient improved and discharged from hospital with No complaint, hemodynamically stable, ECG NSR, normal kidney function and liver function test .

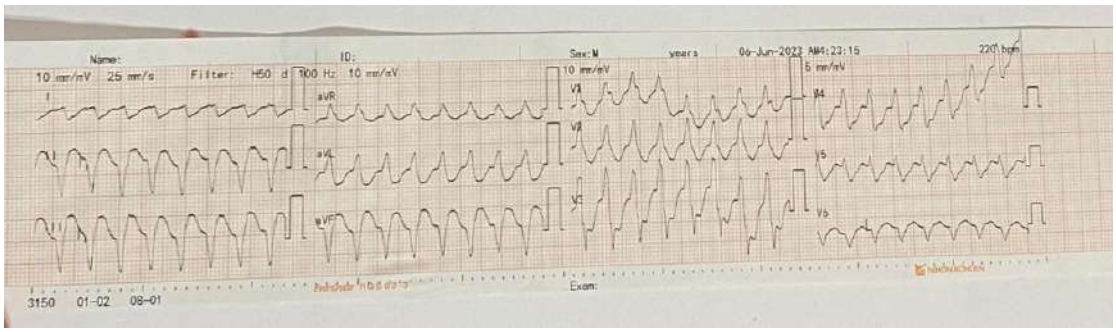

Figure (1) :ECG used for interpretation of the case

DISCUSSION:

While inferior wall myocardial infarction often presents with hemodynamic instability and rhythm disturbances [1], such as sinus bradycardia or heart block, this case underscores the potential for malignant ventricular arrhythmias as a devastating complication [2]. The development of incessant ventricular tachycardia in the setting of inferior STEMI is uncommon but signifies a dire prognosis, necessitating immediate medical intervention[3]. The patient's progression to multi-organ failure, including acute renal failure[3], ischemic hepatitis, and disseminated intravascular coagulation, further illustrates the complexity and severity of the clinical course.[5]

Management of such cases requires a multifaceted approach. Initial treatment with dual antiplatelet therapy[1], statins, and anticoagulation is standard; however, this case demonstrated the need for urgent revascularization when medical therapy fails to control arrhythmias. The persistent ventricular tachycardia despite pharmacological intervention with Amiodarone and Lidocaine, and the subsequent necessity for urgent percutaneous coronary intervention, highlight the challenges faced in managing refractory arrhythmias.[4]

Our case emphasizes the importance of advanced cardiovascular care facilities and the ability to perform urgent coronary angiography and intervention. It also points out the need for ongoing research into better strategies for the prevention and management of arrhythmias in the context of myocardial infarction[3]. Ultimately, improving outcomes for patients with inferior STEMI involves not only acute management but also long-term follow-up and secondary prevention measures.

CONCLUSION:

Inferior STEMI due to right coronary artery occlusion can result in catastrophic complications, including incessant ventricular tachycardia, cardiogenic shock, and multi-organ failure. This case illustrates the severity of such complications even in the presence of preserved left ventricular systolic function, highlighting the importance of early recognition and swift intervention. Timely identification and intervention are crucial to mitigate the risk of fatal outcomes and to improve patient prognosis.

The management of patients with inferior STEMI requires a multidisciplinary approach, encompassing prompt diagnosis, appropriate medical therapy, and timely revascularization. The complexities associated with this condition necessitate comprehensive monitoring and preparedness to manage potential life-threatening arrhythmias and subsequent complications. Such cases underscore the need for advanced critical care resources and a dedicated cardiovascular care team capable of performing urgent procedures like coronary angiography and percutaneous coronary intervention.

Furthermore, this case demonstrates the critical role of continuous hemodynamic support and multi-organ system management in the treatment of patients experiencing severe complications. The integration of supportive measures such as mechanical ventilation, renal replacement therapy, and intensive monitoring is essential for stabilizing the patient and allowing for recovery of the affected organs.

Additionally, long-term follow-up and secondary prevention are vital components of patient care, aimed at reducing the risk of recurrent events and improving overall outcomes. This involves lifestyle modifications, adherence to medical therapy, and regular evaluations by healthcare professionals.

In conclusion, the management of inferior STEMI extends beyond initial treatment and requires a holistic approach that addresses acute complications and long-term prevention strategies. This case serves as a stark reminder of the potential severity of inferior STEMI and the necessity for a well-coordinated, comprehensive care plan to optimize patient survival and quality of life

REFERENCES:

1. Sanz Salvo, J., Arribas, F., López Gil, M., Dalmau, R., Garcíatejada, J., & Jiménez Valero, S. (2002). Incessant ventricular tachycardia as a manifestation of myocardial ischemia. *Revista Española de Cardiología (English Edition)*, 55(2), 193-199. https://doi.org/10.1016/S0300-8932(02)75560-31
2. 2.Altay, H. (2019). Ventricular tachycardia and heart failure. In U. Lakshmanadoss (Ed.), *Practical Applications of Electrocardiogram*. IntechOpen2. https://doi.org/10.5772/intechopen.85256
3. 3.Zehender, M., Utzolino, S., Furtwangler, A., Kasper, W., Meinertz, T., & Just, H. (1991). Time course and interrelation of reperfusion-induced ST changes and ventricular arrhythmias in acute myocardial infarction. *American Journal of Cardiology*, 68(11), 1138-1142. https://doi.org/10.1016/0002-9149(91)90654-23
4. 4.Gressin, V., Louvard, Y., Pezzano, M., & Lardoux, H. (1992). Holter recording of ventricular arrhythmias during intravenous thrombolysis for acute myocardial infarction. *American Journal of Cardiology*, 69(3), 152-159. https://doi.org/10.1016/0002-9149(92)90139-23
5. 5.Six, A. J., Louwerenburg, J. H., Kingma, J. H., Robles de Medina, E. O., & van Hemel, N. M. (1991). Predictive value of ventricular arrhythmias for patency of infarct-related coronary artery after thrombolytic therapy. *British Heart Journal*, 66(2), 143-146. https://doi.org/10.1136/hrt.66.2.143