

CASE REPORT

Cardioversion in Monomorphic Ventricular Tachycardia in Emergency Department

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ABSTRACT

A young AHA class I patient adult attended the Emergency Medicine Department of a Tertiary care center in a shocked state. This patient body mass index was twenty⁵. He did not have any family history of heart disease.⁴ The patient also did not have any history of smoking, diabetes and hypertension.^{13,14} Idiopathic Ventricular tachycardia is common cause of morbidity in young patients where we do not encounter any structural heart problem¹

The patient did not give any history of covid infection and he was vaccinated for covid.^(2,3)

The patient attended the triage of a tertiary care hospital Emergency Department. He came walking to the hospital with complains of ghabrahat and uneasiness. His peripheral pulses were not palpable. He was immediately made to lie down on a trolley and his ECG was done.

His ECG Showed monomorphic Ventricular tachycardia. Patients of cardiac arrhythmias attend the emergency departments quite frequently.⁶

The patient's Blood pressure was not recordable and his carotids were feeble. Therefore, the option of cardioversion with drugs was not possible. Patient was cardioverted by electrical cardioversion and revived immediately.

Increasing number of patients who survive the first attack of, arrhythmia if not started with anti-arrhythmic medication may develop life threatening fatal arrhythmia subsequently.

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There is now substantial evidence to support the wider use of implantable cardioverter-defibrillator devices as primary treatment in some patients with serious ventricular arrhythmia⁷.

KEYWORDS

• Monomorphic Ventricular Tachycardia • Paroxysmal Supra ventricular Tachycardia • Cardioversion • AHA class I • Cardiogenic shock • Pulseless electrical activity.

INTRODUCTION

The patient had no significant comorbidities. He was a healthy young adult with a BMI of 20. He came with the chief complaints of ghabrahat and uneasiness for half an hour. Timely treatment in the first platinum minutes and golden hour could save the patient's life.

CASE REPORT

A 30 year old male attended casualty with his initial ten second assessment showed the Chief Complaints of Ghabrahat and uneasiness. His peripheral pulse was not palpable. Patient was conscious and well oriented to time, space and person. His Carotid Pulse was feeble. BP not recordable Respiration 20/ minute Spo2 not recordable He was not febrile His ECG showed monomorphic Ventricular Tachycardia.

Airway His Respiratory rate was 20/ minute. There was no sign of airway obstruction. Spo2 not recordable and Oxygen mask with reservoir bag at 10 liters flow rate was given to the patient Breathing B/L breath sound normal CVS peripheral pulses not palpable and internal carotid pulsations feeble.

Cervical Spine: Nothing abnormally detected
BP not recordable

Respiration 20/ minute

Spo2 not recordable He was a febrile

His ECG showed monomorphic Ventricular Tachycardia.

Breathing B/L breath sound normal

CVS peripheral pulses not palpable and internal carotid pulsations feeble.

Disability GCS 15/15 Blood Sugar Random 120 mg

Exposure: He was Afebrile

This patient was started with Oxygen 10 liters per minute with mask and reservoir bag

Inj. Fentanyl 100 microgram was given after securing IV line.

Patient chest exposed and Jelly applied.

DC shock 200 joules was given to the patient with due precautions. The rhythm returned to normal but the heart rate was 200 per minute. This time the Blood pressure was recordable to 70 systolic. Simultaneously noradrenaline infusion started due to hypotension. Patient given 6 mg bolus IV Adenosine with 10 ml of saline flush. Pulse came down to 194 per minute. Repeat Adenosine IV 6 mg was given after three minutes with 10 ml Saline flush.

After 3 minutes since the pulse came down to 190 per minute we administered IV Xylocard 60 mg. To which the patient responded very well and his peripheral pulses were palpable. His BP was 90/60 mm of Hg and patient himself felt better. His trop T was done which came out to be negative. His ABG was done which showed metabolic acidosis. The patient's Echocardiography was normal. The ejection fraction was more than 60 percent. No regional wall motion abnormalities were detected. The patients x-ray chest was normal. The patient did not have any electrolyte imbalance. Holter test showed normal and the patient was on Metoprolol 25 mg and amiodarone 300 mg. The patient was discharged and advised to attend Cardiology OPD for followup.

DISCUSSION

This was an apparently young patient AHA class I with no co-morbidities or any past significant history. Such patients need to be attended in the pre hospital setting itself (8,9,10,11,12). Such patients need to be attended in the first golden hours and First platinum minutes. All the A C L S ambulances need to have Equipment and emergency crash carts to be kept ready to manage patients immediately. As per the figure 1 the patient was given amiodarone but we gave adenosine as our patient developed P

SVT therefore we gave adenosine to the patient. Chest compressions continued until Reversal of spontaneous circulation. Injection nor-adrenalin was given instead of Adrenalin as patient had systolic BP of 70 mm. Patient was also given Injection Fentanyl for pain management. Since P S V T was not relieved with adenosine we

administered intravenous 60 mg of xylocard and the patient responded well and the pulse was reverted back to 60 per minute of regular rhythm.

Figure 2 shows monomorphic ventricular tachycardia on arrival to Emergency Department.

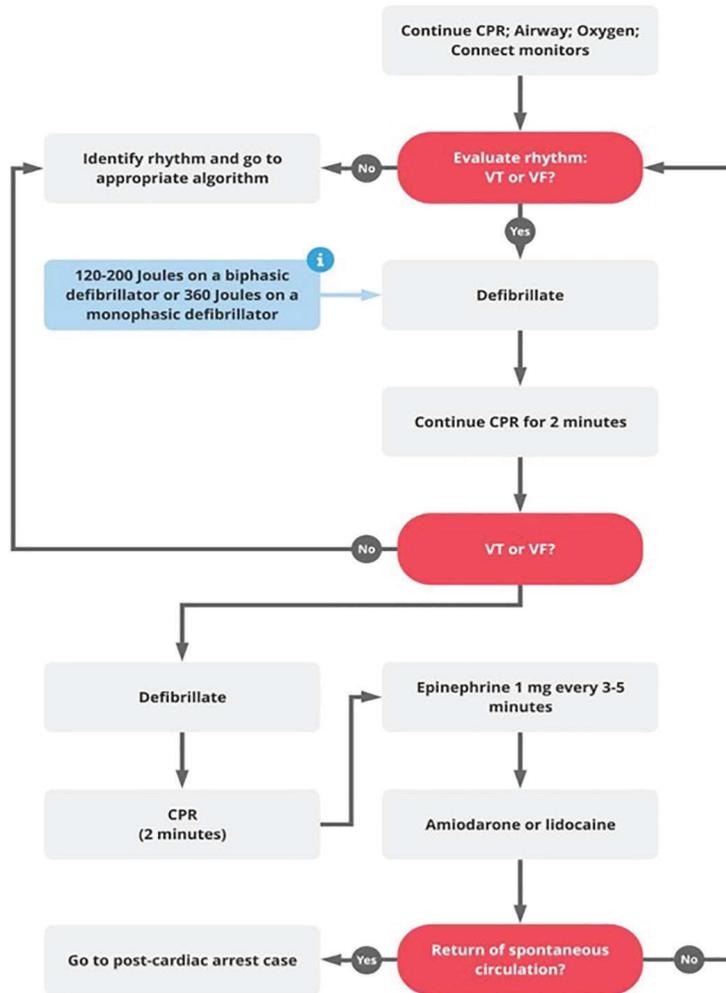


Figure 1: Showing ACLS Algorithm in Ventricular Tachycardia and Ventricular Fibrillation

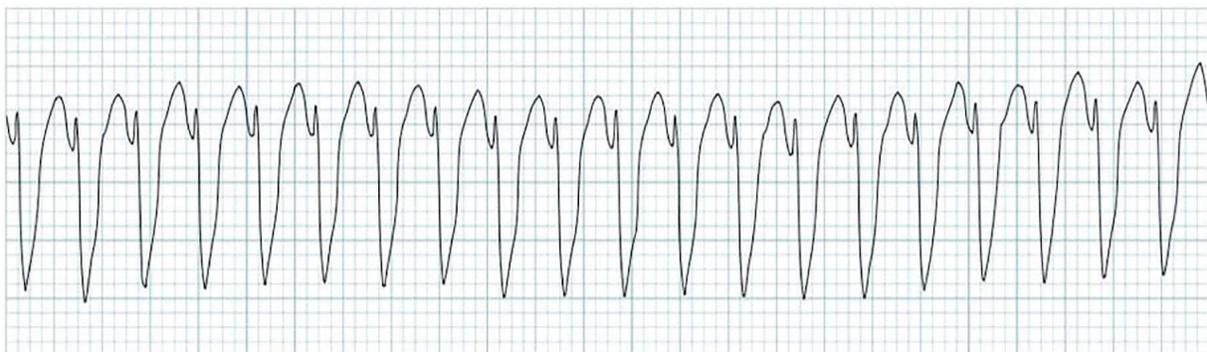


Figure 2: Showing Monomorphic Ventricular Tachycardia

CONCLUSION

The incidence of young patients having cardiac emergencies is rising & therefore frequent routine checkups, healthy eating habits and following healthy routine of exercises can prevent morbidity and mortality. It is confirmed by series of trials such as Antiarrhythmic versus Implantable Defibrillator, Cardiac arrest Study Hamburg and Canadian Implantable Defibrillator Study that implantable cardioverters-defibrillators or ICDs have proved immensely to reduce the risk of sudden cardiac deaths. Therefore, young patients have the option of implantable cardioverters defibrillators for improving chances of survival. Every patient can manifest different clinical picture. Algorithms are for guidance but we need to treat as per the patient need during emergency situations. Implantable cardioverters-defibrillators should be available in Emergency departments of all hospitals and ACLS ambulances.

Consent: Informed consent was obtained from the patient's family for publication of this case report. Patient confidentiality and anonymity have been maintained.

Conflict of Interest: The authors declare no conflicts of interest.

REFERENCES

1. Idiopathic Ventricular Tachycardia; Robert C. Ward¹, Martinvan Zyl¹, Christopher V. DeSimone^{1,2} *J Clin Med.* 2023 Jan 25; 12(3): 930. doi: 10.3390/jcm12030930
2. Marco Zuin¹, Gianluca Rigatelli², Valentina Battisti³, Giulia Costola³, Loris Ronconi⁴, Claudio Bilato³ Increased risk of acute myocardial infarction after COVID-19 recovery: A systematic review and meta-analysis; Meta-Analysis; *Int J Cardiol.* 2023 Feb 1; 372: 138-143. doi: 10.1016/j.ijcard.2022.12.032. Epub 2022 Dec 16.
3. Julia Stowe^a, Heather J. Whitaker^a, Nick J. Andrews^a, Elizabeth Miller^b Risk of cardiac arrhythmia and cardiac arrest after primary and booster COVID-19 vaccination in England: A self-controlled case series analysis; *Vaccine: X*; Volume 15, December 2023, 100418; <https://doi.org/10.1016/j.jvacx.2023.100418>
4. Britt-Maria Beckmann¹, Arne Pfeufer², Stefan Käb^{1,*} Inherited Cardiac Arrhythmias Diagnosis, Treatment, and Prevention; *Dtsch Arztebl Int.* 2011 Sep 16; 108(37): 623-634. doi: 10.3238/arztebl.2011.0623
5. Kiran Hareesh Kumar Patel¹, Rohin K Reddy¹, ArunashisSau¹, Pavidra Sivanandarajah¹, Maddalena Ardissino^{1,2}, FuSiong Ng Obesity as a risk factor for cardiac arrhythmias; *BMJ Med.* 2022 Oct 19; 1(1): e000308. doi: 10.1136/bmjmed-2022-000308
6. H. Domanovits¹, M. Paulis, M. Nikfardjam, M. Holzer, H.G. Stühlinger, M.M. Hirschl, A.N. Laggner; Sustained ventricular tachycardia in the emergency department; *Clinical Trial; Resuscitation.* 1999 Sep; 42(1): 19-25. doi: 10.1016/s0300-9572(99)00044-1.
7. Jason P. Causer¹, Derek T. Connelly¹ Implantable defibrillators for life threatening ventricular arrhythmias; Are more effective than antiarrhythmic drugs in selected high risk patients; *BMJ.* 1998 Sep 19; 317(7161): 762-763. doi: 10.1136/bmj.317.7161.762
8. Barbara J. Deal, M.D., Scott M. Miller, M.D., Daniel Scagliotti, M.D., Ventricular tachycardia In a young population without overt disease; *Circulation*; 1986 Jun.
9. Foth C., Gangwani M.K., Ahmed I., *et al.* Ventricular Tachycardia. [Updated 2023 Jul 30]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK532954/>
10. Gausche M., Persse D.E., Sugarman T., Shea S.R., Palmer G.L., Lewis R.J., Brueske P.J., Mahadevan S., Melio F.R., Kuwate J.H., *et al.* Adenosine for the prehospital treatment of paroxysmal supraventricular tachycardia. *Ann Emerg Med.* 1994 Aug; 24(2): 183-9. doi: 10.1016/s0196-0644(94)70128-8. PMID: 8037382.
11. David P. Keseg, M.D., FACEP; Eric Cortez, MD Carla Cash, MD Raymond L. Fowler, MD, FACEP, FAEMS: Strategies for Pre hospital Treatment of Stable Ventricular Tachycardia: March 1.2018
12. Management of Cardiac arrest; *Circulation*; Volume 12, Number 24, November 2005
13. YangYang, NianchunPeng, GangChen, QinWan, LiYan; Interaction between smoking and diabetes in relation to subsequent risk of cardiovascular events; *Cardiovascular Diabetology* volume 21, Article number: 14 (2022)
14. John R. Petrie¹, Tomasz J. Guzik¹, Rhian M Touyz^{1,*}; Diabetes, Hypertension, and Cardiovascular Disease: Clinical Insights and Vascular Mechanisms; *Can J Cardiol.* 2018 May; 34(5): 575-584. doi: 10.1016/j.cjca.2017.12.005