

A Case Report on Idiopathic Premature Ventricular Complex [PVC] Occurring During Intake of Clarified Butter and Associated with Stress

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Abstract

Premature Ventricular Complexes are extremely common and associated with various factors like obesity, physical inactivity, Stress, Smoking and increasing age. The PVC's are mostly incidental findings in ECG, Frequent PVC can give rise to complications like Tachyarrhythmia's, Left Ventricular Dysfunction and Cardiomyopathy. Most of the patients diagnosed will be asymptomatic and require conservative management and few might require Medical Management or Radio Frequency Ablation therapy. In this case report a young women with no associated comorbidities with unusual presentation of PVC with Clarified Butter intake and associated stress is being managed.

Keywords: Premature Ventricular Complex, , Beta Blockers ,Radio Frequency ablation

Introduction:

Premature Ventricular Complex is also known as ventricular premature beats, extra systole, or ectopic heartbeat which is a benign condition where a group of ectopic pacemaker cells in the conducting system, are capable of spontaneous depolarization which conducts faster than the sinus impulse, if the impulse arising from the ventricle, it is called ventricular ectopic beats which leads to asynchronous contraction of ventricles. Even though they are considered harmless concern raises lately due to increased cardiac morbidity and mortality. The MADIT-CRT study showed a higher risk of ventricular tachycardia, ventricular fibrillation, heart failure, cardiomyopathy, and death was significantly associated with PVC⁽¹⁾. PVC's are often related to emotional Stress, drug-induced, and other dietary habits like caffeine⁽²⁾. In our case study we found that rare association between Clarified butter intake and associated stress with the development of PVC which subsided with selective Beta1 blockers.

Case Presentation:

26 year old recently married woman came with complaints of Palpitations on and off for the past 3 weeks which she noted during intake of Clarified butter which started within 15-20min of butter intake and lasted for 3-4 hrs, The symptoms got aggravated on climbing stairs. There is also a history of stress-related to adjusting to a new family environment. Further goes-on after obtaining written informed Consent.

On examination

PR-107 /mt, Irregularly Irregular

BP-110/70mmHg

RS-AEBE, CVS-S1, S2 +, Irregularly Irregular Heart Beat

Investigations:

A 12 lead ECG was performed when the patient was in discomfort

ECG showed Ventricular Trigeminy initially (Figure:1) , Repeat ECG after an hour showed Multiple Premature Ventricular Complex (Figure:2)

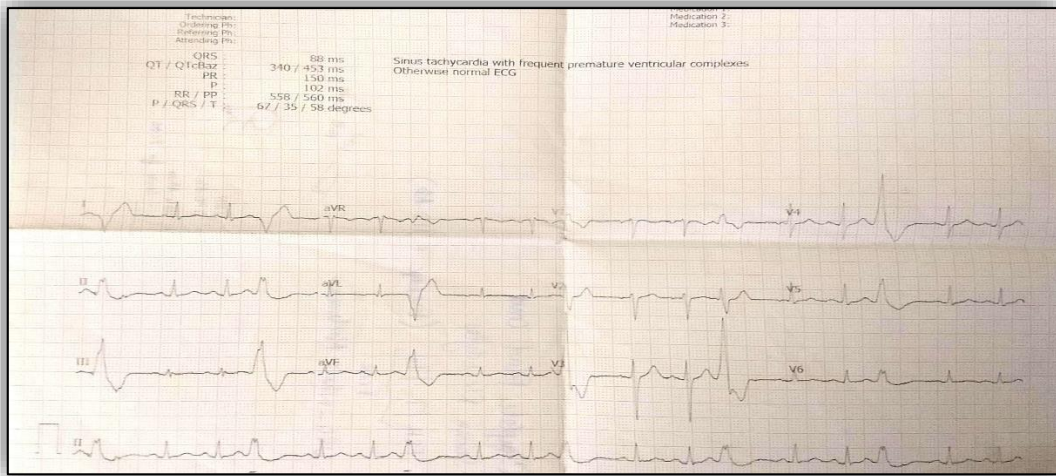


Figure 1: Ventricular Trigeminy

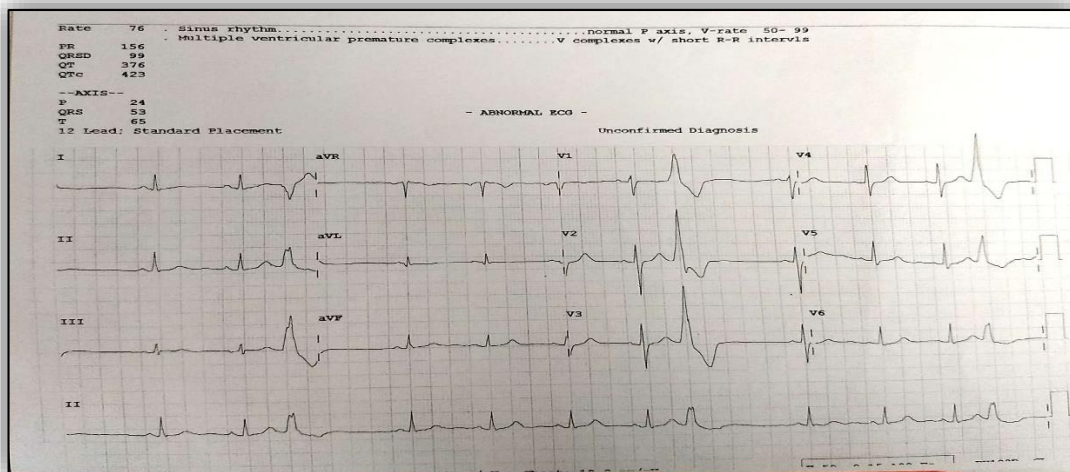


Figure 2: Multiple Premature Ventricular Complex

Her Complete Blood Count, Thyroid Function Test and Serum Electrolytes were found to be normal. ECHO was Normal (Figure:3)

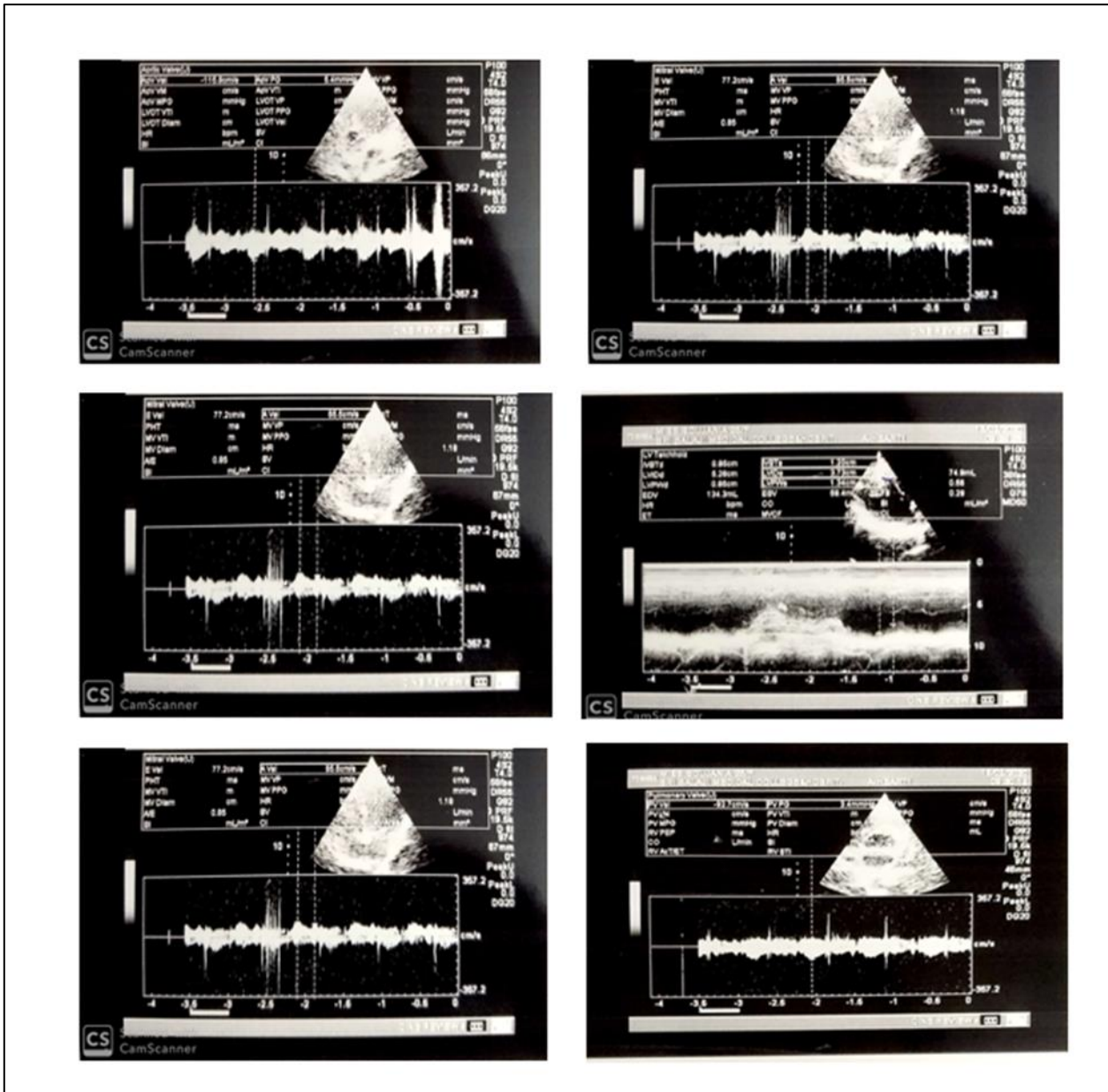


Figure 3: Echo-Normal

24 Hr Holter Monitoring showed – Sinus rhythm , Frequent Unifocal PVC’s in Singles, No NSVT.(Figure:4)

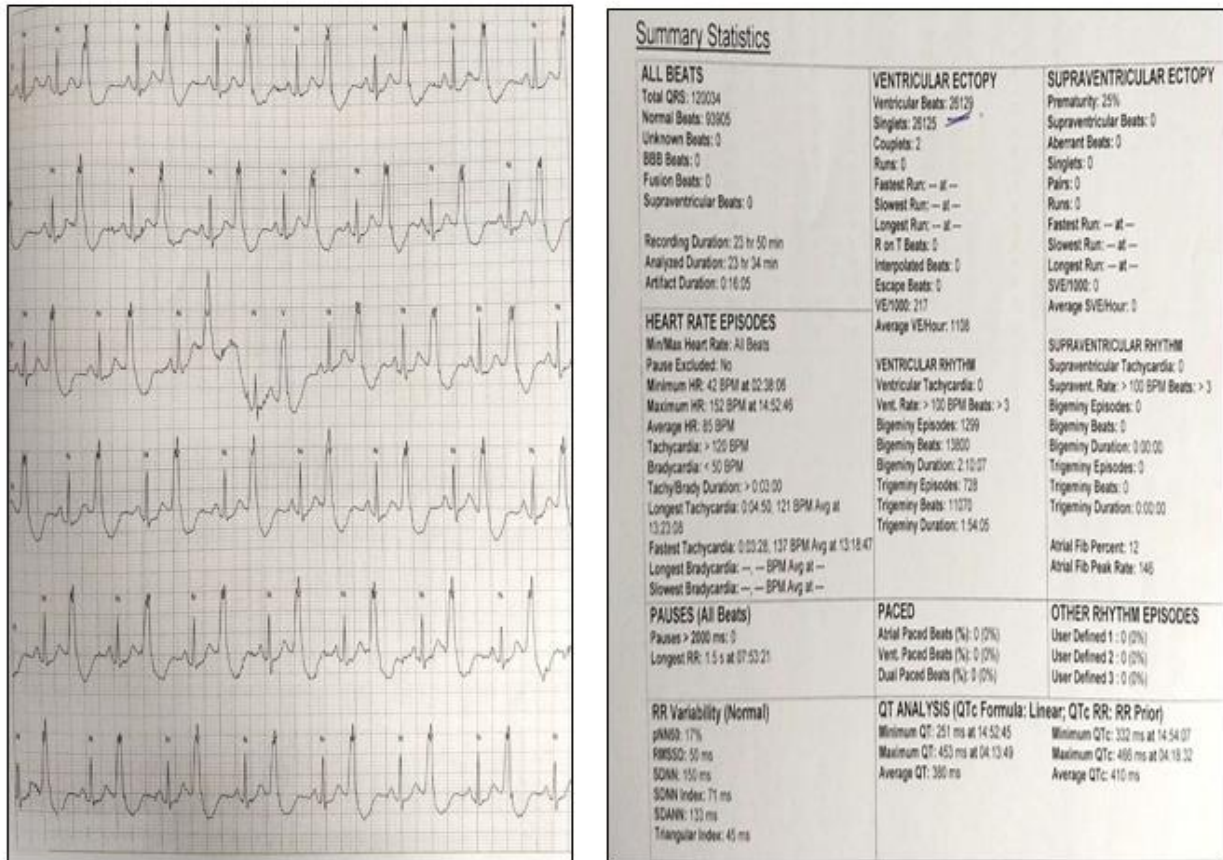


Figure 4: Holter Monitoring with Pulsus Bigeminy and summary

Treatment:

She was started on Selective Beta₁ Blocker T.Metoprolol 25mg twice daily which she tolerated very well .Repeated ECG after a week showed Normal ECG patterns and followed up for 3 months which she didn't have any episodes of palpitations. Considering her plans for conception the drug was stopped and she was followed up for another 3 monthly for 1 year and 6monthly for another year. The symptoms didn't recur afresh with the use of clarified butter (Change her product brand) and all follow-up ECG's were within normal limits (Figure :5).

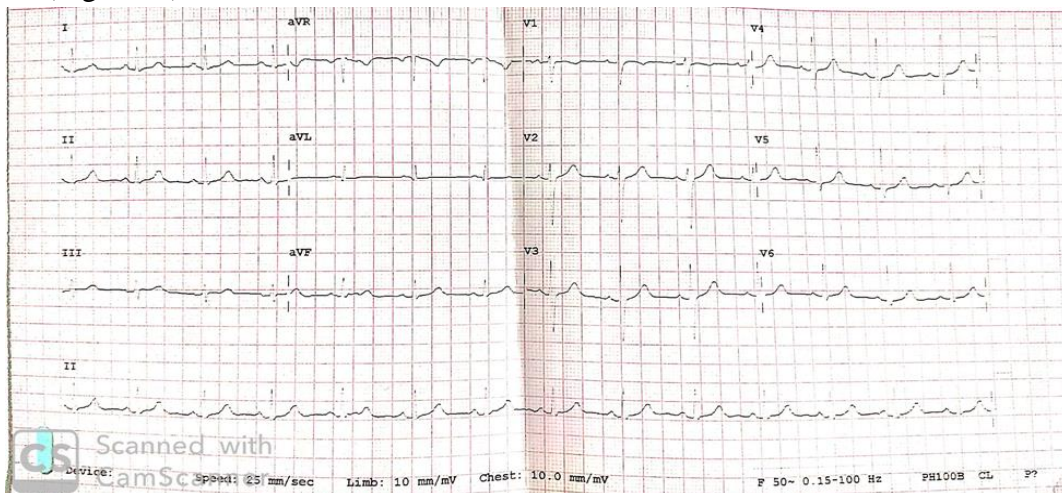


Figure 5: ECG after treatment –Normal Sinus Rhythm

Discussion:

PVCs occur in 1.2–10.7% of the general population, The majority of which are asymptomatic findings in 12-lead ECG and Holter tracings⁽³⁾. The PVC's can be Unifocal or Multifocal. Unifocal arises from a single ectopic focus whereas multifocal from multiple ectopic foci within the ventricles. PVC'S from Right Ventricle has a Left Bundle Branch pattern block and vice-versa⁽⁴⁾. The mechanism of idiopathic VT from the right ventricular outflow tract is aided through the sympathetic nervous system, recognized to be cyclic adenosine monophosphate (c-AMP)-mediated via Beta₁receptor in cardiac myocyte triggering the activity⁽⁵⁾. This will in-turn increases the Force of contraction and Heart rate by depolarizing rapidly than the SA node and end up producing Premature Ventricular Complex.

PVC'S with an organic component need treatment as per guideline-directed medical therapy (GDMT) guidelines⁽⁴⁾. Since most of the PVC's are asymptomatic which barely requires any treatment⁽⁶⁾, But few symptomatic Premature Ventricular beats might require medical therapy, and for refractory and uncommon ectopic origin Electrophysiological Radio Frequency Ablation(EP-RFA)^{(7),(8)} therapy is the mode of management. The success of EP-RFA ranges from 80%- 95%⁽⁹⁾. Some studies showed PVC's association with Caffeine, Alcohol and even Intermittent fasting⁽⁹⁾. Drugs of choice in the management of Premature Ventricular complex belong to Anti arrhythmic classification II and IV i.e Beta₁ Blockers and Calcium Channel Blockers Respectively^{(10),(6)}.

Beta 1 Blocker act by inhibiting the G_s mediated cAMP activation which is the main pathophysiology behind PVC's. In fact Beta1 Blockers are great option for younger individuals. Non- dihydropyridine group of Calcium Channel Blockers like diltiazem and verapamil are excellent in controlling PVC's without any organic cause⁽¹¹⁾ its action in SA node causing Nodal depression, Decreasing the conduction velocity and inotropic effect in the heart⁽¹²⁾ unlike Dihydropyridine group which has no nodal action and will cause reflex tachycardia.

In this case the Holter report shows 26,125 Ventricular Ectopic beats with Pulsus Bigeminy pattern during Exertion, which conclude the beats are from single ectopic foci with identical PVC'S beats i.e Unifocal PVC's. Hence starting off with a Selective Beta Blocker would be ideal in this case and the patient also responded very well within a week of starting the treatment, with no further episodes in a 2 year follow up period. The probable cause of her Premature Ventricular Beat could be stress-related or else an ingredient used for purification of clarified butter of that particular brand since switching over to a different brand didn't have any impact.

Conclusion:

Premature Ventricular Complexes are common incidental findings in most of the occasions. But due to its increasing association with Cardiovascular morbidity and mortality, early intervention is appropriate. Stress related PVC'S can be prevented with life style modifications. Yet few symptomatic patient require drug therapy, refractory and multifoci premature ventricular beats might undergo Radio Frequency Ablation therapy to Shield the heart from severe Ventricular Arrhythmias and Cardiomyopathy.

Conflict Of Interest

There is no conflicts of interest

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