Original Article

A CASE OF SUPRAVENTRICULAR TACHYCARDIA REVERTED USING MODIFIED VALSALVA MANOUEVRE

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Abstract

Case report of a pregnant woman in her 2nd trimester presenting with a tachy-arrhythmia who was non-pharmacologically cardioverted in the emergency medicine department using the modified Valsalva i.e., postural modification to the standard Valsalva and successful reversion of the same.

A 35-year-old pregnant woman in her 26th week of pregnancy gravida (3), para (1), living (1), abortion (1), was brought to the emergency room with palpitations and diaphoresis. Primary survey of the patient detected an abnormally high heart rate of 216 (beats per minute) and an ECG suggestive of supraventricular tachycardia. Patient was under the criteria for a stable tachy-arrhythmia and it was decided to perform vagal manoeuvre's expediently to cardiovert the patient, after a failed attempt at carotid massage and diving reflex. Modified Valsalva manoeuvre was performed with success. Later discharged home in good health.

The aim of this article is to bring to light the importance of the emergency physician's role in identifying tachy-arrhythmia's, using safe, newer, effective techniques available in the armamentarium of interventions at disposal. All the more important in pregnancy due to the increased risk of adverse pregnancy outcomes (APO), that endanger the foetus and the mother and adversely impacting the prognosis off pregnancy.

Key words: Pregnancy, emergency medicine physician, tachy-arrhythmia, modified Valsalva, safe.

Introduction:

Supraventricular tachycardia (SVT) is a rhythm abnormality of the cardiac conduction system resulting in an abnormally high heart rate, increased rate of cardiac contractions from impulses that arise from the myocardium other than the sinoatrial node and above the level of the atrioventricular node. Typically, heart rate ranging from 160 to 240bpm is noted.

The SVT can have drastic presentations ranging from a benign palpitation, anxiety and can progress to include syncope, heart failure, myocardial infarction due to increased oxygen demand. Even benign SVT can be life threatening if not attended to in time as over time they can worsen the stress on the myocardium and precipitate,

- acute heart failure
- altered sensorium
- ischemic chest pain
- hypotension
- signs of shock (reduced capillary refill time, cyanosis peripherally)

Above signs are deemed signs that qualify for electrical cardioversion, as per the advanced cardiac life support guidelines (ACLS) prescribed by the American heart association (AHA).

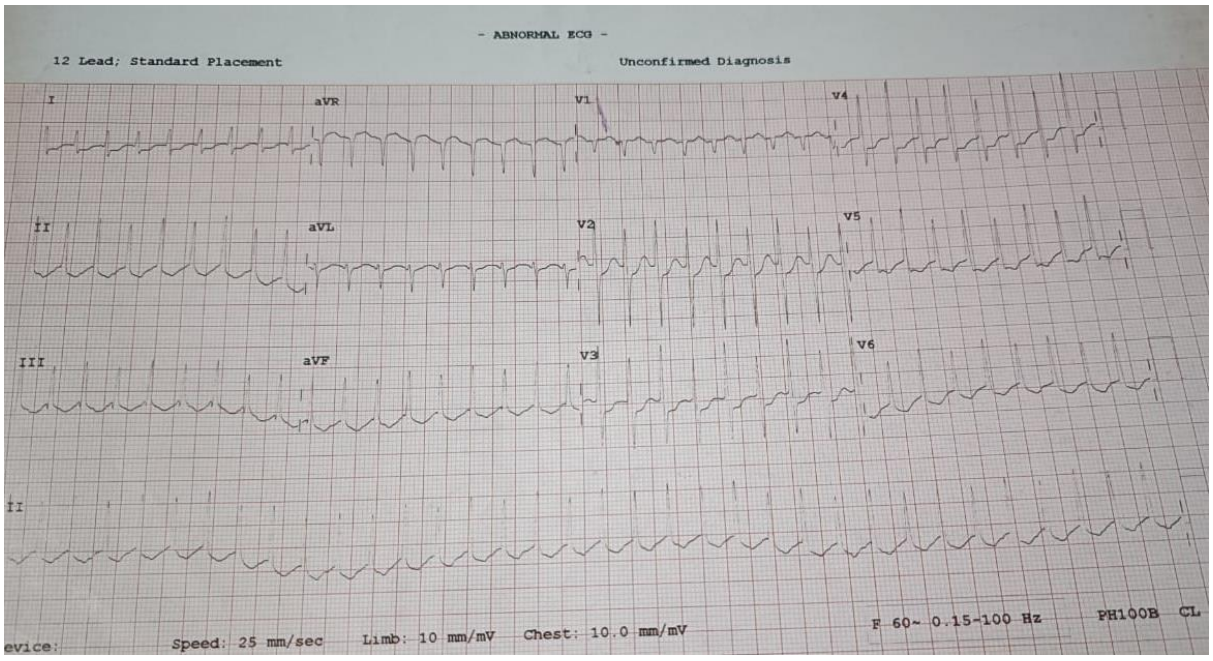
The following case highlights the timely, well-informed decision and application of a less applied modified Valsalva manoeuvre in a pregnant woman in her 2 trimester to revert an SVT to a sinus rhythm, with no adverse outcomes.

Case report:

A 35-year-old gravida (3), para (1), living (1), abortion (1) lady in her second trimester was brought to the emergency room (ER), with complaints of palpitations, diaphoresis for 3 hours.

Patient on examination was conscious, oriented resting respiratory rate of 18 cycles per minute, heart rate of 216 beats per minute and blood pressure measuring 100/70mmHg.

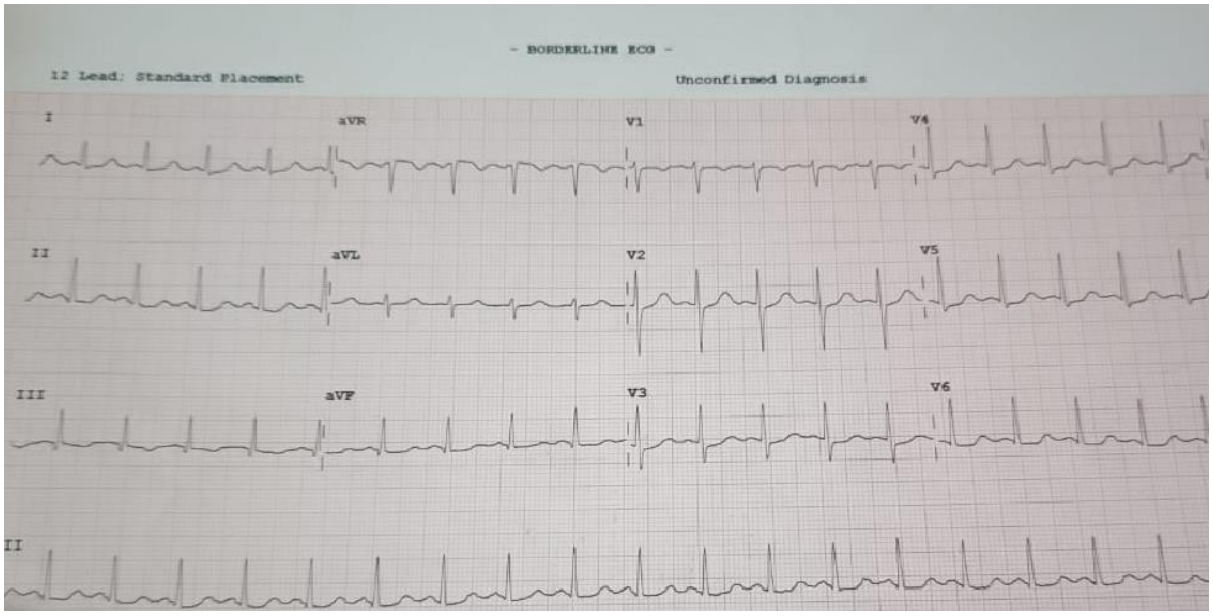
Primary adjuncts in the form of an ECG and bedside troponins were done, ECG suggestive of SVT.



As per ACLS guidelines, patient was planned for management as per stable SVT algorithm, in view of which patient was counselled regarding the condition and the plan of management for the same.

Patient underwent non pharmacological interventions in the form of vagal manoeuvre's, including carotid massage as well as nose dive reflex, after failing to revert the rhythm back to sinus rhythm. It was planned to administer the modified Valsalva manoeuvre to abate the arrhythmia and after her consent was obtained, the patient performed the modified Valsalva i.e., postural modification to standard Valsalva manoeuvre.

Following a first failed attempt, patient strain was deemed inadequate and was re-briefed regarding the procedure. Prior to attempting the manoeuvre for a second time, patient was reassessed vitally and was found to be in stable SVT, resulting in a second attempt and successful conversion of the SVT.



The patient was admitted in the ER for further observation of recurrence and intimated to cardiology, obstetrics and gynaecology and transferred under their care, on follow up the mother and foetus were healthy and were advised discharge with no further recurrence of the arrhythmia or any feto-maternal complications during their stay in the hospital.

Discussion:

SVT are the most common arrhythmia in the pregnant population (53%) and there has been documented increase in the incidence of SVT among pregnant woman over the years although unclear as to the aetiology, it is all the more important for an emergency medicine physician to be aware of arrhythmia's that complicate pregnancy and their management. The emergency medicine physician being the first contact at any hospital, should be well versed with the vagal manoeuvres and the medications available at his disposal should the manoeuvre's fail and alternate plans of management to restore normal sinus rhythm and abate the arrhythmia. Patients with history of arrhythmia's during pregnancy have been noted to have a higher all cause in hospital mortality along with increased incidence of APO, including but not limited to preeclampsia, preterm labour, placental abruption, etc. Identifying and responding expediently to correct the arrhythmia's leads to morbidity and better patient care, that is where the role of an emergency medicine physician's timely intervention becomes of paramount importance [1].

The armamentarium of safe and available interventions to tackle an arrhythmia of pregnancy are varied and many in number. Ranging from simple vagal manoeuvres to medical cardioversion, electrical cardioversion to lastly radiofrequency ablation within the cardiology specialty usually reserved for the persistent, drug and electrically refractory cases of SVT [2].

The postural modification to standard Valsalva is a well-established technique utilised to resolve arrhythmias, advised to be administered as a first line vagal manoeuvre for its superiority over the standard Valsalva manoeuvre [3].

The claim for increased rates of reversion of arrhythmia's were noted by a small-scale study, which noted non pharmacological reversion's increased from a 5% to 31%, since the introduction of modified Valsalva's [4].

A newer modification to the modified Valsalva was performed after considering the vena caval compression produced by the enlarged uterus in 3rd trimester by adding a 45-degree pelvic tilt to the modified Valsalva. The case report documented successful cardioversion after the newly applied modification to the method [5].

Conclusion:

Pregnancy brings with it a litany of medical complications to the woman bearing the child, and arrhythmias can further complicate a previously normal pregnancy. Effective and timely intervention at the level of first contact and with availability of newer methods for non-pharmacological options for cardioversion should encourage and enable the emergency medicine physician to tackle the arrhythmia's in a manner that is confident, safe and beneficial to the mother and foetus.

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