

Preoperative Paroxysmal Supraventricular Tachycardia on Lumbar Disc Prolapse in Elderly Woman with Dilated Left Atrium-Surgical Hesitation and Management

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Abstract

Rationale: Preoperative preparation is an essential and pivotal step to reduce the patient's surgical and anesthetic perioperative morbidity and mortality. Stress sometimes has a critical role. Paroxysmal supraventricular tachycardia is a well-known syndrome of supraventricular tachycardia, characterized by intermittent regular tachycardia rhythm, sudden onset, and abrupt termination. Cardiac atria may have a role in the induction of paroxysmal supraventricular tachycardia

Patient concerns: An elder-aged housewife widow female, Egyptian patient was documented for surgical repairing of lumbar disc prolapse with happening of an accidental preoperative paroxysmal supraventricular tachycardia.

Diagnosis: Preoperative paroxysmal supraventricular tachycardia on lumbar disc prolapse in an elderly woman with a dilated left atrium.

Interventions: Electrocardiography, echocardiography, verapamil intravenous injection, and oxygenation. Outcomes: Perioperative arrhythmias such as paroxysmal supraventricular tachycardia represent the fear for both surgeons and anesthesiologists. Perioperative electrocardiographic paroxysmal supraventricular tachycardia with evidence of p-mitral and echocardiographic evidence of left atrium dilatation in an elder-aged female patient may be reasonable for postponing the decision for the operation.

Keywords: Operative preparation; Accessory pathways; Surgery and anesthesia; Supraventricular arrhythmia; Left atrium; Disc prolapse; Surgical decision

Abbreviations: AF: Atrial Fibrillations; ECG: Electrocardiogram; ED: Emergency Department; ICU: Intensive Care Unit; IHD: Ischemic Heart Disease; O2: Oxygen; POC Physician Outpatient Clinic PSVT: Paroxysmal Supraventricular Tachycardia; VR: Ventricular rate

Introduction

Preoperative preparation aims to reduce the patient's surgical and anesthetic perioperative morbidity and mortality, with the return of desirable functioning as rapidly as possible. Indeed, the perioperative risk is mostly, multifactorial. So, the function of the preoperative medical condition of the patient, the surgical procedure, and the anesthetic type are considered keys. A history, clinical examination, and evaluation of the patient's functional capacity, focusing on risk factors especially, cardiac and pulmonary are essential to any preoperative preparation. The workup investigations should be requested according to the patient's medical status and the nature of the supposed operation and not on a routine basis. Persons without concomitant medical problems may need little more than a quick medical review. Proper consultations should be done to improve the patient's health. Generally, surgical operations and anesthesia are often accompanied by a complex stress response that is usually correlating to the magnitude of the injury, total operating time, amount of intraoperative blood loss, and degree of postoperative pain [1]. However, safe and efficient surgical and anesthesia interventions

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need an optimized patient. Numerous large-scale epidemiological studies have indicated that inadequate preoperative preparation of the patient may be a major contributory factor to the primary causes of perioperative mortality. Indeed, cardiovascular and respiratory diseases are the most relevant to fitness for anesthesia and surgery [2-4].

Paroxysmal Supraventricular Tachycardia (PSVT) is a well-known syndrome of supraventricular tachycardia, characterized by intermittent regular tachycardia rhythm, sudden onset, and abrupt termination. Palpitations and dizziness are the most common presentations. Electrocardiogram shows a narrow QRS-complex, regular tachycardia, and hidden or inverted P waves. Re-entry due to the presence of inhomogeneous, accessory, or concealed conducting pathways is implicated in pathogenesis [5]. Av-Nodal Re-Entrant Tachycardia (AVNRT) (up 56% of cases), atrioventricular reentrant tachycardia (AVRT) (up 27% of cases), Wolff-Parkinson-White syndrome, and paroxysmal atrial tachycardia (up 17% of cases) are famous types [5,6]. PSVT occurs due to abnormal electrical activity that begins in the atria. This abnormal activity yields very quick atrial contraction, over and over again [7].

Endocrinal (such as hyperthyroidism), drugs and toxins such as (caffeinated beverages, nicotine, hydralazine, atropine, adenosine, verapamil, salbutamol, ecstasy, cocaine, amphetamines alcohol, and digoxin toxicity), cardiovascular; structural heart disease such as (myocardial infarction, Ebstein anomaly, pericarditis, myocarditis, cardiomyopathy, pulmonary embolism, rheumatic heart disease, and mitral valve prolapse), chest diseases such as (pneumonia, chronic lung disease, chest wall trauma, and hypoxia), psychiatric such as (anxiety), vascular such as hypovolemia) are probable implicated factors for PSVT [8]. If patients are hemodynamically stable, vagal maneuvers, intravenous adenosine, diltiazem, or verapamil will be suggested treatment. However, if patients are hemodynamically unstable, cardioversion will be the choice of therapeutic option. Patients with symptomatic and recurrent PSVT can be treated with long-term drug treatment or catheter ablation [5].

Case Presentation

A 72-year-old housewife widow female Egyptian patient was presented with happening of an accidental preoperative

paroxysmal supraventricular tachycardia within 30 minutes before the supposed surgical repairing of lumbar disc prolapse. There is a history of anxiety and stress. Upon preoperative clinical examination; generally, the patient was tachypneic, anxious with a regular rapid pulse rate of 160, Blood Pressure (BP) of 140/80mmHg, respiratory rate of 20bpm, GCS of 15/15, a temperature of 36 °C, Oxygen (O₂) saturation of 99% she seemed thin. No more relevant clinical data were noted during the clinical examination. The patient was admitted to the ICU. Initially, she was treated with O₂ inhalation (100%, by nasal cannula, 5L/min) and reassurance. Valsalva maneuvers were tried but with no response.

An Intravenous Injection of Verapamil ampoule (5mg, IVB, once, over 2 minutes) was given. The patient maintained monitoring for vital signs in the ICU for 3 hours post-injection of verapamil ampoule. Preoperative CBC, liver function tests, and renal function tests were within normal. Later thyroid functions were within normal. Serum ionized calcium was slightly low (0.9mmol/L). The troponin I tested was normal (0.03ng/ml) RBS was normal (119mg/dl). The initial ECG tracing was done on the preoperative preparation one day before the supposed surgical repair showing sinus arrhythmia of VR; 80. There is evidence of p-mitral with a notch or broken line near its peak in lead II.

There is a Wavy triple sign (Yasser's sign) in the V1 lead Figure 1. The second ECG tracing was done within 30 minutes before the supposed surgical intervention showing regular rapid tachycardia of VR; 160 with absent p-waves. There is a Wavy triple sign (Yasser's sign) in I, III, aVL, and aVF leads Figure 2A. The third ECG tracing was done within 10 minutes of IVB verapamil injection showing NSR of VR; 82. There is a disappearance of the above Wavy triple sign (Yasser's sign) Figure 2B. Echocardiography was done within 24 hours before the supposed surgical intervention and showed diastolic dysfunction, dilated left atrium with EF of 72.7% Figure 3. Preoperative paroxysmal supraventricular tachycardia on lumbar disc prolapse in an elderly woman with a dilated left atrium was the most probable diagnosis. The patient was maintained on sustained- released verapamil (240mg, OD) tablets. The surgical repair of lumbar disc prolapse was postponed. Future reassurance and cardiac follow-up were advised.

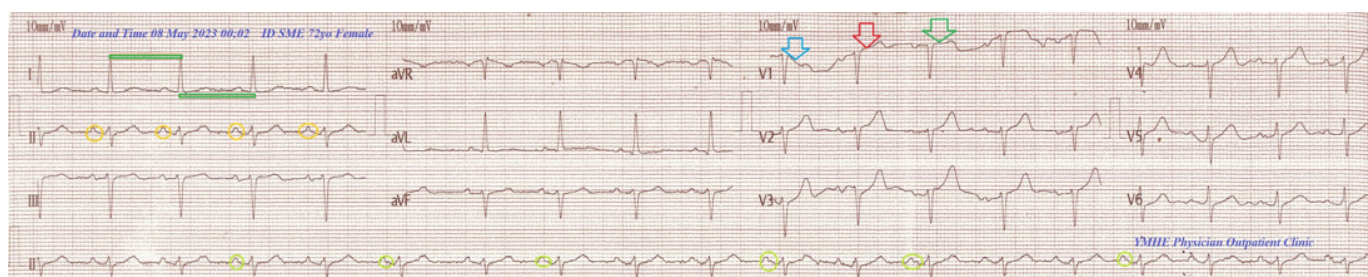


Figure 1: ECG tracing was done on the preoperative preparation one day before the supposed surgical repair showing sinus arrhythmia (green rectangles) of VR; 80. There is evidence of p-mitral (golden circles in lead II) with a notch or broken line near its peak (lime circles in strip II). There is a Wavy triple sign (Yasser's sign) in V1 lead (blue, red, and green arrows).

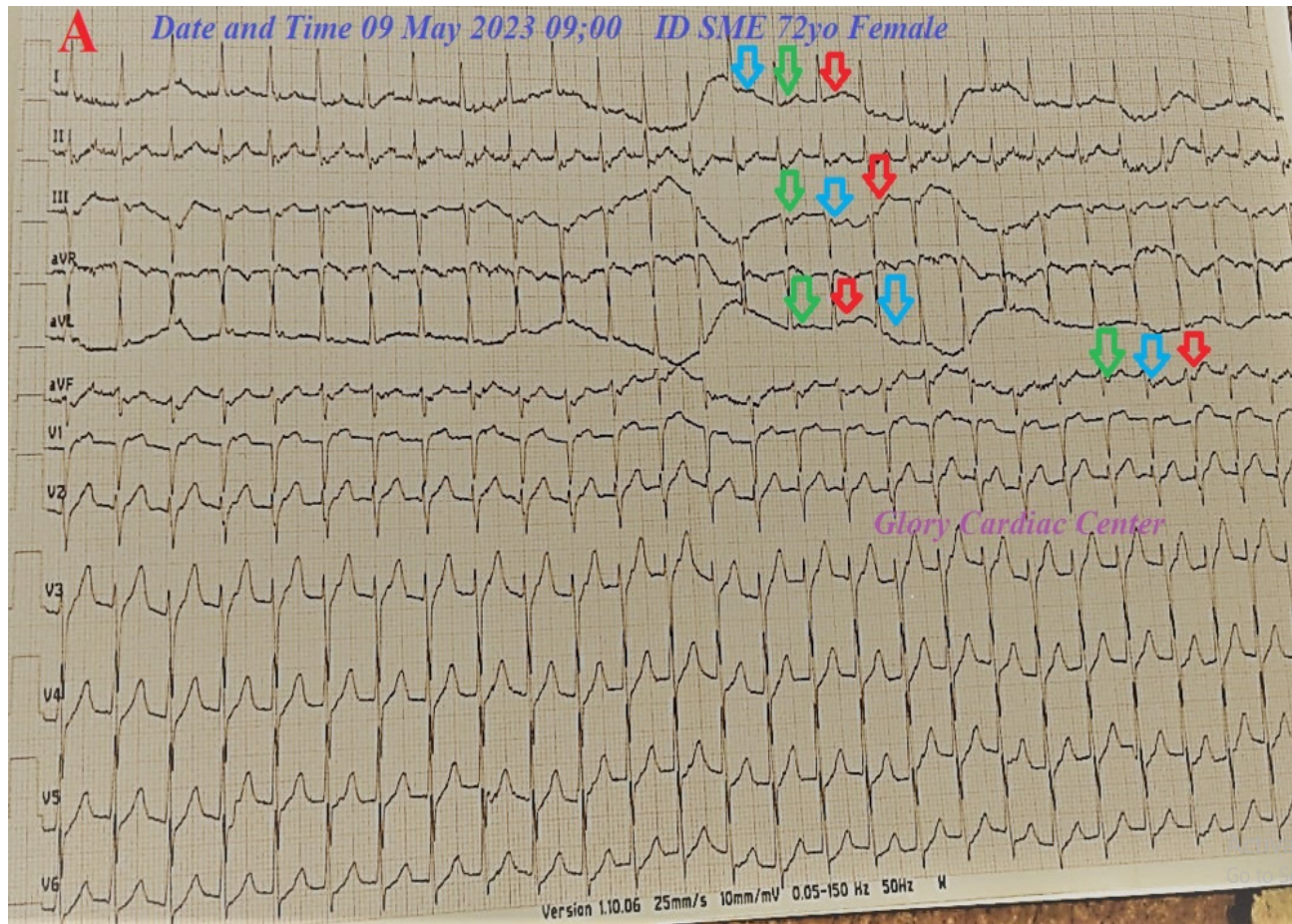


Figure 2A: ECG tracing was done within 30 minutes before the supposed surgical intervention showing regular rapid tachycardia of VR; 160 with absent p-waves. There is a Wavy triple sign (Yasser's sign) in I, III, aVL, and aVF leads (blue, red, and green arrows).

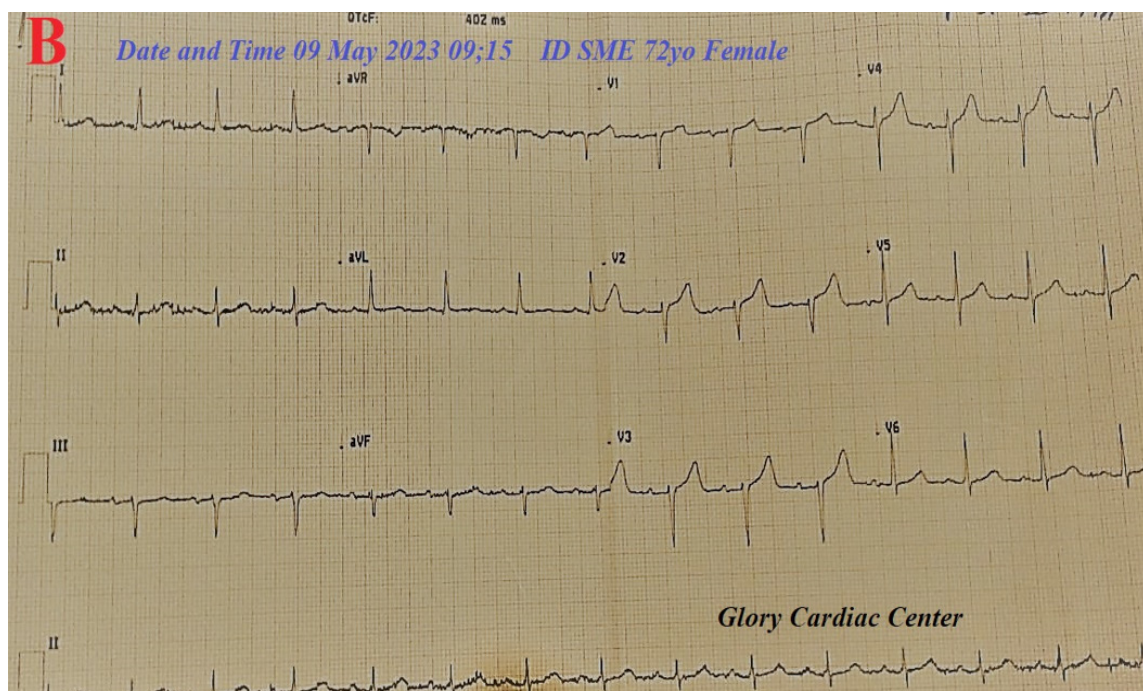


Figure 2B: ECG tracing was done within 10 minutes of IVB verapamil injection showing NSR of VR; 82. There is a disappearance of the above Wavy triple sign (Yasser's sign).

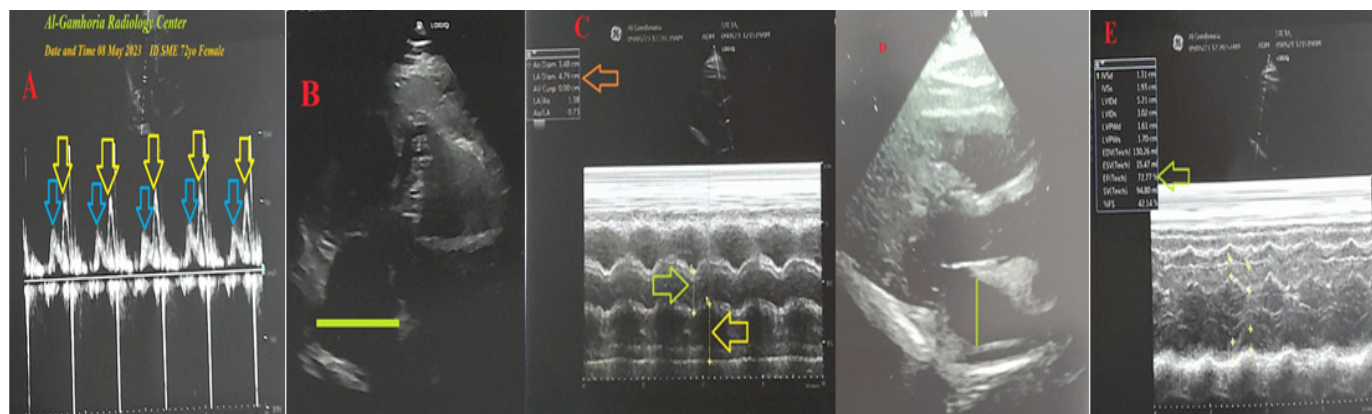


Figure 3: Echocardiography was done within 24 hours before the supposed surgical intervention and showed diastolic dysfunction (yellow and blue arrows), dilated left atrium in apical 4-chamber (lime rectangle), M-mode (orange and yellow arrows), and 2-D-view (lime rectangle) with EF of 72.7% (lime arrow).

Discussion

Overview

- An elder-aged housewife widow female, Egyptian patient was documented for surgical repairing of lumbar disc prolapse with happening of an accidental preoperative paroxysmal supraventricular tachycardia.
- The primary objective for my case study was the presence of an accidental preoperative paroxysmal supraventricular tachycardia in an elderly female, Egyptian patient who was documented for surgical repairing of lumbar disc prolapse.
- The secondary objective for my case study was the question of how you would manage this case in the ICU.
- Interestingly, the presence of regular rapid tachycardia of VR; 160 with absent p-waves will strengthen a diagnosis of PSVT.
- There is a Wavy triple sign (Yasser's sign) in I, III, aVL, and aVF leads indicate hypocalcemia. Perioperative anxiety and associated tachypnea due to stress may be a possible cause.
- The disappearance of a Wavy triple sign (Yasser's sign) in I, III, aVL, and aVF leads indicates a Movable-Weaning phenomenon (Yasser's phenomenon)
- There is electrocardiographic evidence of p-mitral Figure 1. Echocardiographic evidence of dilated left atrium Figure 3 is correlating with ECG p-mitral.
- Atrial Fibrillations (AF) was the most probable differential diagnosis for the current case study. However, regular rhythm is against the diagnosis of AF.
- I can't compare the current case with similar conditions. There are no similar or known cases with the same management for near comparison.
- There are no limitations of the current study.

Conclusion and Recommendations

Perioperative arrhythmias such as paroxysmal supraventricular tachycardia represents the fear for both surgeons and anesthesiologists. Perioperative electrocardiographic paroxysmal supraventricular tachycardia with evidence of p-mitral and echocardiographic evidence of left atrium dilatation in an elder-aged female patient may be reasonable for postponing the decision for the operation.

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