Defecation Syncope; Digging Deep: A Case Report

Ghulam Kubra[1], Fariha Hassan[1], Shazia Rasheed[1], Muhammad Liaquat Raza[2*], Lubna Baqai[3] and Muhammad Asad[4]

[1]*Department of Cardiac Electrophysiology, National Institute of Cardiovascular Diseases (NICVD), Karachi, Pakistan*
[2]*Department of Health Management, IoBM, Karachi, Pakistan*
[3]*Department of Cardiology, Tabba Heart Hospital, Karachi, Pakistan*
[4]*Department of Cardiology, Benazir Bhutto Hospital, Rawalpindi, Pakistan*

Abstract

Defecation syncope explains the exaggerated vasovagal response while defecating, which may result in unconsciousness and rarely cardiac arrest. It is underreported, mainly because of the patient's hesitation and inability to correlate the two, unless specifically probed by meticulous history taking; the importance of which cannot be over-emphasized.

A 28- year old fieldworker with two episodes of syncope, the last of which culminated in a cardiac arrest requiring resuscitation by a bystander. Upon further questioning, it was revealed that both times, the patient had the urge to defecate followed by dizziness and warmth preceding the loss of consciousness. A head-up tilt table test was planned as a means to reenact the symptoms. Upon confirmation of diagnosis, the patient was counselled for lifestyle changes only.

Defecation syncope leading to cardiac arrest is a rare entity but with high mortality ratio. Since vagal tone increases during straining effort, reducing physiological response may be helpful to avoid lethal results. Hydration, avoidance of constipation, and squatting position are among the important key risk-reducing factors.

Keywords: *Defecation, vagal nerve, tone, constipation, lifestyle change.*

INTRODUCTION

Syncope as a clinical presentation accounts for 3-5% of emergency room visits, and defecation syncope (DS) which comes under the umbrella of situational syncope, is infrequently described in the literature [1]. DS is described as the exaggerated vasovagal reflex occurring during defecation that results in unconsciousness.

Defecation syncope associated with cardiac arrest was initially published in 1968, and thereafter reports of defecation syncope appeared rarely [2-4]. Curtis *et al.* reported two cases of in-hospital defecation syncope post-operatively in 2015.

For the last many years' cardiac arrest associated with defecation both in-hospital and at home is increasingly under consideration. Mechanism of hemodynamic changes that occur during physiological straining effort [2]. The vasovagal reflex is a normal physiologic mechanism that comprises hemodynamic changes, which are recovered by itself in a normal person [5]. Mechanical changes during this response due to changes in intrathoracic and intra-abdominal pressures may cause blood pressure, cardiac output, and heart rate changes. These changes compromise blood flow to the brain which may lead to the loss of consciousness sometime and rarely this can put the patient at risk for an adverse cardiac event [6].

**Corresponding author: Muhammad Liaquat Raza, Department of Health Management, IoBM, Karachi, Pakistan, E-mail: liaquathej@yahoo.com;*
Received: November 14, 2022; Revised: December 16, 2022; Accepted: December 21, 2022
DOI: https://doi.org/10.37184/lnjpc.2707-3521.5.16

CASE PRESENTATION

A 28-year male without prior known risk factor for coronary artery disease, field worker by occupation. He had a prior history of cardiac arrest, for which CPR was done for 2 min preceded by a syncopal episode. He had two episodes of syncope associated with an urge to defecate. The first episode of syncope occurred at night time when he went to the bathroom for defecation. Meanwhile, he felt warmth and became dizzy, and fell but recovered spontaneously after a few seconds. The second episode occurred with the same feeling of warmth when he was having lunch with his friend who was, fortunately, a healthcare professional. At that time again with an urge to defecate, he became pale followed by a tonic seizure. His friend started resuscitation along with mouth-to-mouth breathing and after two minutes he regained consciousness.

He was advised to work up. An electrocardiogram done at baseline was normal, similar to his echocardiogram (**Fig. 1**). He was advised for an implantable loop recorder (ILR) at some hospital. Based on the cost concerns of an ILR, he came to our institution for a second opinion.

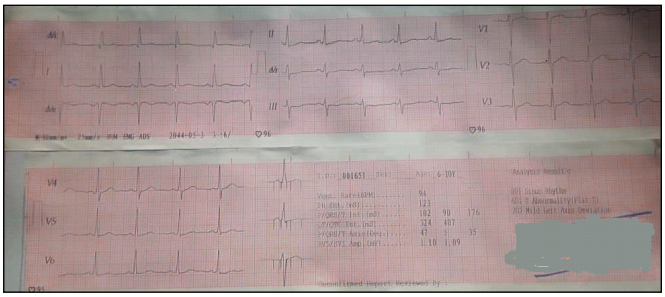

Fig. (1): ECG at baseline showing normal sinus.

After taking detailed history a provisional diagnosis of situational (defecation) syncope was made and the patient was planned for a head-up tilt table test.

We started the test after taking baseline blood pressure and pulse before and after the carotid massage. Continuous blood pressure and pulse monitoring was done after nitroglycerine provocation (**Fig. 2a** and **2b**). At around 6 min into the test he experienced the same feeling of warmth and flushing that he had felt in the preceding two episodes heart rate during this time dropped from 136bpm to 59bpm and his blood pressure from 117/77 mmHg to un-recordable. He then developed seizure-like activity along with the up rolling of eyes ECG showed a junctional rhythm (**Fig. 2c**), at which point the test was stopped with confirmation of the diagnosis of reflex syncope.

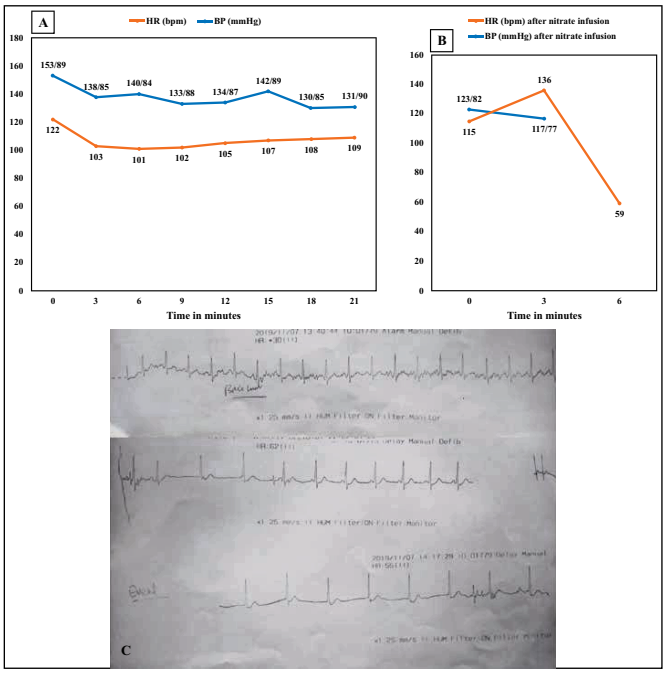

Fig. (2): (**A**) Tilt table test without with (**B**) nitroglycerin infusion and (**C**) ECG during event showing junctional rhythm.

The patient has been advised of a couple of measures prevention of constipation, avoidance of unnecessary straining, and improved hydration status. At six months of follow-up, the patient has remained well and asymptomatic.

DISCUSSION

DS comes among the rare causes of syncope, especially exposing the elderly population to risk. This entity is more common in the female gender and may take longer to diagnose due to a lack of knowledge to report symptoms appropriately to a doctor.

In a case series of twenty patients with DS, it was reported that a significant number of patients with an "unknown cause" for syncope had endocrine disorders, or co-existing diseases such as diabetes, systemic lupus erythematosus, and underlying cardiac disease [2]. In a study, Komatsu *et al.* reported associated underlying cardiovascular disorder in 65% of patients with defecation syncope [6]. Correcting any underlying cause or treating the co-morbid conditions is reported to be the main therapy [7].

The Valsalva response comprises four phases, from the start of forced expiration against closed glottis to the recovery phase. It explains the integrity of autonomic control of the heart where an increase in blood pressure causes an increase in vagal tone and a decrease in heart rate and vice versa. Early phases of Valsalva bring mechanical changes due to changes in intrathoracic and intra-abdominal pressure. Where a decrease in venous return to the heart causes a decrease in cardiac output and arterial blood pressure. Reflex tachycardia and vasoconstriction try to compensate and arrest further fall in blood pressure at this stage. This causes a gradual increase in blood pressure towards or above baseline (temporary over-shoot) in the recovery phase with bradycardia mediated by baroreceptor reflex. Studies have shown many cardiac rhythm disturbances, and impaired cerebral blood flow, in patients performing Valsalva [2, 6, 8]. The hemodynamic changes occurring in Valsalva response may lead to syncope, and rarely to cardiac arrest [7-8].

In our presented case, the syncopal events started with prodromal symptoms like nausea, urge to defecate and abdominal pain followed by syncope and led to cardiac arrest. Although, the exact mechanism of such type of cardiac arrest is not well defined yet. But we know that the increase in vagal response and circulatory changes during Valsalva, the absence of any associated disorder, may support the diagnosis of defecation syncope. In such clinical scenarios, we do not need to implant long-term recorders which do not cost and time-effective, especially, in a developing country where we cannot forget the importance of detailed history. Which can easily guide us to a possible diagnosis, help to find vital clues towards the underlying disorder, and should not be neglected in clinical practice.

CONCLUSION

DS leading to cardiac arrest is a rare entity. Since vagal tone increases during straining effort, reducing physiological response may be helpful to avoid lethal results. Proper hydration, avoidance of constipation, and squatting position, all are risk-reducing factors. More importantly, we highlighted the importance of taking proper detail history., Detailed history in almost every case may be fruitful to make a possible clinical diagnosis without spending time and money on fancy diagnostic tests which may be unnecessary in every case. A Few extra minutes on taking detailed history can be cost-effective, particularly in our setup where the cost of diagnostic tools is a big matter.

CONSENT FOR PUBLICATION

Written informed consent was taken from the participants.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

ACKNOWLEDGEMENTS

We are thankful to the technician at the cardiology department for their support with the equipment.

REFERENCES

1. Soteriades ES, Evans JC, Larson MG, Chen MH, Chen L, Benjamin EJ *et al.* Incidence and prognosis of syncope. N Engl J Med 2002; 347(12): 878-85. DOI: https://doi.org/10.1056/nejmoa012407
2. Schartum S. Ventricular arrest caused by the Valsalva maneuver in a patient with Adams-Stokes attacks accompanying defecation. Acta Med Scand 1968; 184(1-6): 65-8. DOI: https://doi.org/10.1111/j.0954-6820.1968.tb02423.x
3. Pathy MS. Defaecation syncope. Age Ageing 1978; 7(4): 233-6. DOI: https://doi.org/10.1093/ageing/7.4.233
4. Sikirov BA. Cardio-vascular events at defecation: are they unavoidable? Med Hypotheses 1990; 32(3): 231-3. DOI: https://doi.org/10.1016/0306-9877(90)90128-2
5. Gershman SJ, Niv Y. Perceptual estimation obeys Occam's razor. Front Psychol 2013; 4: 623. DOI: https://doi.org/10.3389/fpsyg.2013.00623
6. Komatsu K, Sumiyoshi M, Abe H, Kohno R, Hayashi H, Sekita G, *et al.* Clinical characteristics of defecation syncope compared with micturition syncope. Circ J 2010; 74(2): 307-11. DOI: https://doi.org/10.1253/circj.cj-09-0421
7. Kim YH, Phillips VZ, Paik SH, Jeon NJ, Kim BM, Kim BY. Prefrontal hemodynamic changes measured using near-infrared spectroscopy during the Valsalva maneuver in patients with orthostatic intolerance. Neurophotonics 2018; 5(1): 015002. DOI: https://doi.org/10.1117/1.nph.5.1.015002
8. Curtis B, Hughes T, Bue DL, Salgado CJ. Defecation syncope: Two cases of post-operative cardiac arrest. Anaplastology 2015; 4: 142. DOI: https://doi.org/10.4172/2161-1173.1000142