

Fear-Inducing Coronary Spasm in an Asthmatic Patient with Right Bundle Branch Block; Oxygen Reversal and Reassurance

Yasser Mohammed Hassanain Elsayed

Critical Care Unit, Damietta Health Affairs, *Egyptian Ministry of Health* (MOH), Damietta, Egypt.

***Corresponding Author:** Yasser Mohammed Hassanain Elsayed, Critical Care Unit, Damietta Health Affairs, Egyptian Ministry of Health (MOH), Damietta, Egypt.

Received Date: December 29, 2021; **Accepted Date:** January 25, 2022; **Published Date:** February 03, 2022

Citation: Y M H Elsayed. (2021) Fear-Inducing Coronary Spasm in an Asthmatic Patient with Right Bundle Branch Block; Oxygen Reversal and Reassurance. *Cardiology Research and Reports*. 4(2): DOI:10.31579/2692-9759/029

Copyright: © 2021 Yasser Mohammed Hassanain Elsayed, This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Abstract

Rationale: Fear is one of the most psychosomatic risk factors in clinical medicine. Generally, ischemic cardiovascular events are strongly linked with psychological stress.

Patient concerns: An elderly-aged housewife female asthmatic patient presented to the physician outpatient clinic for cardiovascular follow-up is getting coronary artery spasm after inducible fear.

Diagnosis: Fear-inducing coronary spasm in an asthmatic patient with right bundle branch block.

Interventions; Electrocardiography, oxygenation, and echocardiography.

Outcomes: Dramatic of both clinical and electrocardiographic improvement post-oxygenation had happened.

Lessons: The fear may be an inducible factor for coronary artery spasm and cardiovascular events. It signifies the role of oxygenation in the reversal of coronary artery spasm and it is the future concept. The association of patient right bundle branch block in an asthmatic patient is reasonable. The presence of the patient's relatives or friends during medical procedures may be a source of danger to the patient.

Keywords: fear-inducing coronary spasm; stress; bronchial asthma; right bundle branch block; variant angina; oxygen

Abbreviations

CAS; Coronary artery spasm

CBC: Complete blood count

ECG: Electrocardiography

IHD: Ischemic heart disease

O₂: Oxygen

POC: Physician outpatient clinic

RBBB: right bundle branch

VR: Ventricular rate

Introduction

The **coronary artery spasm (CAS)** is a cardiovascular disorder describing sudden, acute narrowing of an epicardial coronary artery that

yields vessel occlusion or near-occlusion [1]. Mental stress, in particular, may be causing CAS [2]. Coronary artery spasms can be triggered by any type of stress [3]. Coronary artery spasm has a remarkable role in the pathogenesis of ischemic heart disease (IHD), including angina pectoris, acute myocardial infarction (AMI), and sudden cardiac death (SCD) [4]. The precise mechanisms that underlie CAS remain to be unknown. CAS is mostly a disease of middle- and older-aged men and post-menopausal women. Reactive O₂ species degrade NO and cause vasoconstriction. So, oxidative stress, endothelial dysfunction, and low-grade chronic inflammation play an important role in the pathogenesis of CAS, leading to increased coronary SM Ca²⁺ sensitivity through RhoA/ROCK activation and resultant hypercontraction [4]. Common manifestations of IHD due to CAS are chest pain, an ECG ST-segment changes and accompanied with cold sweat, nausea, vomiting, and syncope in the more severe and prolonged attack. It should be noted, however, that myocardial ischemia due to CAS often occurs without accompanying symptoms [5, 6]. The ECG changes that occur during a CAS attack include ST-segment elevation and/or depression, increase in the amplitude of the T-wave, and

negative U-wave at the beginning or near the end of the [7]. Long-acting nitrates and calcium antagonists are the cornerstone drugs of choice (DOC) in preventing future CAS episodes [8]. Statin also may prevent spasms [3]. The right bundle branch (RBBB) is usually severe bronchial asthma (BA) and correlated with the degree of airway obstruction [9].

Case presentation

A 65-year-old married housewife Egyptian female asthmatic patient presented with her jokey son to the physician outpatient clinic (POC) for cardiovascular follow-up. Generalized malaise, loss of appetite, loss of smell and taste, and generalized body aches were associated symptoms. The patient gave a history of bronchial asthma since 20 years ago. She denies a history of regular medications except for asthmatic attacks. Informed consent was taken. Upon general physical examination; generally, the patient was good, not distressed, with a regular pulse rate of VR; 74 bpm, blood pressure (BP) of 110/70 mmHg, respiratory rate of 16 bpm, the temperature of 36.5 °C, and pulse oximeter of oxygen (O₂) saturation of 97%. She appeared thin. There were no wheezes on chest examination. No more relevant clinical data were noted during the clinical examination. The initial ECG tracing was done on the presentation for follow-up showing RBBB with normal sinus rhythm of VR of 70 with movable artifact (in V1 lead) (Figure 1A). During the ECG procedure, her jokey son told her; the electrocardiograph may be causing electrical

shock for you. The mother urgently started to sense severe acute chest pain. The second ECG tracing was done within one minute of the initial ECG and after inducible fear, post-acute drama showing NSR of VR; 82 bpm with RBBB, and ST-segment depression in both inferior (III and aVF) and anterior (V2-6) leads (Figure 1B). The physician had urgently managed the patient with O₂ inhalation by O₂ cylinder (100%, by nasal cannula, 5L/min) and reassurance. The physician prevents her son to be present during doing the third ECG tracing which was done within 15 minutes of O₂ inhalation and after relieving the chest pain showing NSR of VR; 74 bpm, normalization of the above ST-segment depression, and still the presence of RBBB (Figure 1C). The complete blood count (CBC); Hb was 11.5 g/dl, RBCs; $4.3 \times 10^3/\text{mm}^3$, WBCs; $7 \times 10^3/\text{mm}^3$ (Neutrophils; 50 %, Lymphocytes: 46%, Monocytes; 2%, Eosinophils; 2% and Basophils 0%), Platelets; $200 \times 10^3/\text{mm}^3$. RBS was normal (112 mg/dl). The troponin test was negative. Echocardiography was done on the second day of the presentation showing no abnormalities with an EF of 67%. (Figure 2). Fear-inducing coronary spasm in an asthmatic patient with right bundle branch block was **the most probable diagnosis**. Complete recovery achieved and the patient was advised for cardiac follow-up. Diltiazem oral tablet (60 mg, once daily) was prescribed. Further recommended cardiac chest follow-up, and weight reduction was advised.

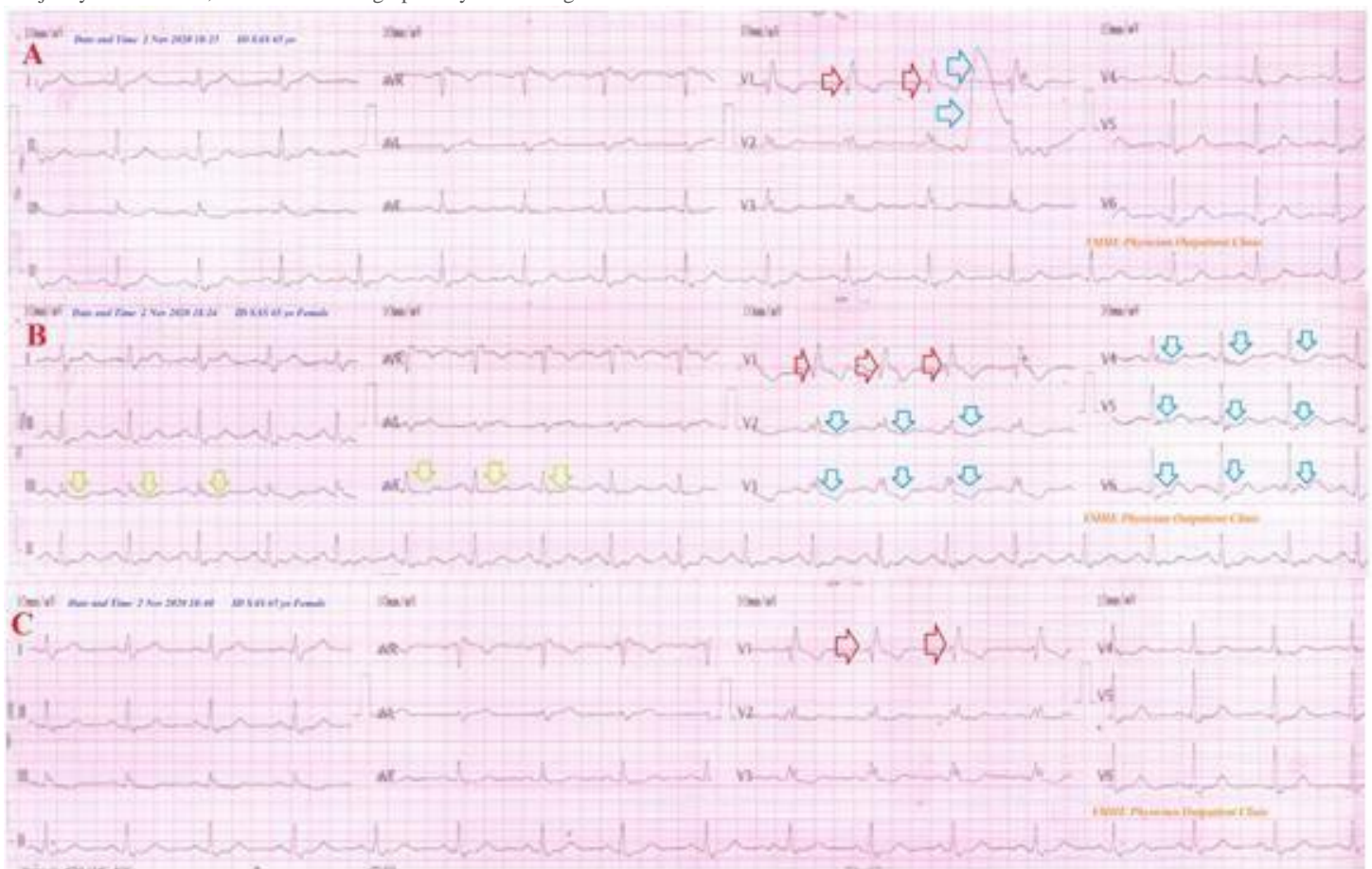


Figure 1: ECG tracings; A. tracing was done on the initial ECG on presentation showing NSR of VR; 70 bpm with RBBB (red arrows). There is movable artifact in V1 lead (blue arrows). **B.** tracing was done within one minute of the initial ECG and after inducible fear showing NSR of VR; 82 bpm with RBBB (red arrows), and ST-segment depression in both inferior (III and aVF; blue arrows) and anterior (V2-6; lime arrows) leads. **C.** tracing was done within 15 minutes of O₂ inhalation showing NSR of VR; 74 bpm, normalization of the above ST-segment depression, and still presence of RBBB (red arrows).

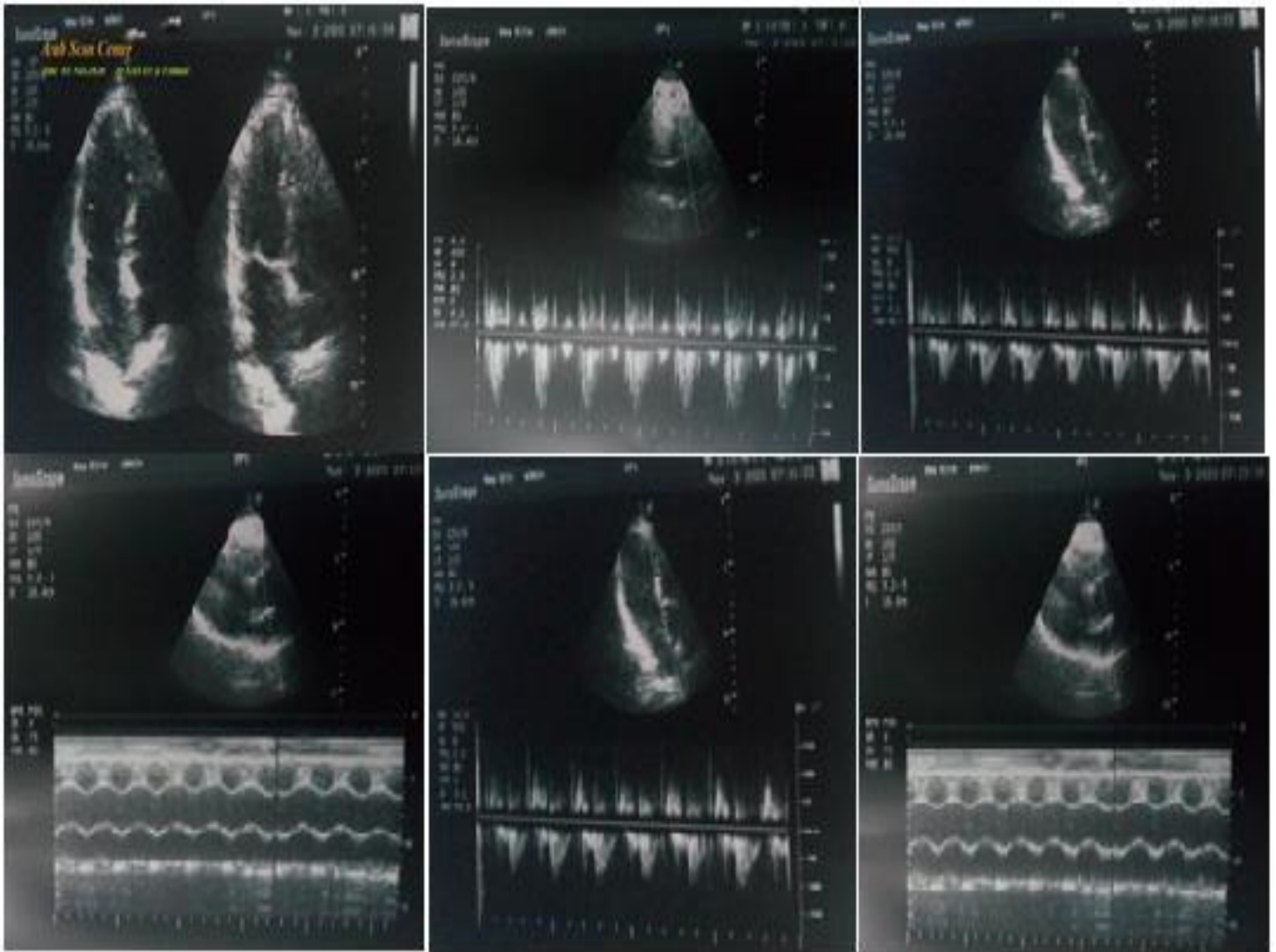


Figure 2: Echocardiography images were done on the second day of the presentation showing no abnormalities with EF of 67%.

Discussion • Overview:

- An elderly-aged housewife female asthmatic patient presented to the POC for cardiovascular follow-up is getting CAS after fear.
- **The primary objective** for my case study was the presence of coronary artery spasms post-fear in an elderly-aged housewife asthmatic patient in the POC.
- **The secondary objective** for my case study was the **question** of; How did you manage the case at home?
- An existence of CAS after fear in the above drama indicating the role of fear in inducing ischemic heart disease.
- Prevention of her son to be present after his dangerous action during doing the third ECG tracing was reasonable.
- The presence of RBBB after relieving of the CAS may be interpreted as a normal ECG variant or asthmatic association.
- Dramatic reversal of ST-segment depressions after oxygen set is meaning the presence of CAS.

- The dramatic response of the above clinical manifestations and ECG changes of CAS only to 100 % O₂ was the target of the study.
- Right ventricular strain with possible acute pulmonary embolism (APE) is **the most possible differential diagnosis** for the current case study.
- I can't **compare** the current case with similar conditions. There are no similar or known cases with the same management for near comparison.
- The only limitation of the current study was the unavailability of the catheterization invasive test for coronary spasms.

Conclusion and Recommendations

- The fear may be an inducible factor for coronary artery spasm and cardiovascular events.
- It signifies the role of oxygenation in the reversal of coronary artery spasm and it is the future concept.
- The association of patient right bundle branch block in an asthmatic patient is reasonable.

- The presence of the patient's relatives or friends during medical procedures may be a source of danger to the patient.

Conflicts of interest

- There are no conflicts of interest.

Acknowledgment

- I wish to thanks my wife to save time and improving the conditions for supporting me.

References

1. Lanza GA, Careri G, and Crea F. (2011). Mechanisms of Coronary Artery Spasm. 18; 124(16):1774-1782.
2. Yeung AC, Vekshtein VI, Krantz DS, Vita JA, Ryan TJ Jr, Ganz P, Selwyn AP. (1991). The effect of atherosclerosis on the vasomotor response of coronary arteries to mental stress. N Engl J Med. 28; 325(22):1551-1556.
3. Mankad R. (2019). Coronary artery spasm: Cause for concern?.
4. Yasue H, Mizuno Y, Harada E. (2019). Coronary artery spasm - Clinical features, pathogenesis and treatment. Proc Jpn Acad Ser B Phys Biol Sci. 95(2):53-66.
5. Yasue H, Kugiyama K. (1997). Coronary spasm: clinical features and pathogenesis. Intern Med. 36(11):760-765.
6. Yasue H, Nakagawa H, Itoh T, Harada E, Mizuno Y. (2008). Coronary artery spasm--clinical features, diagnosis, pathogenesis, and treatment. J Cardiol. 51(1):2-17.
7. Yasue H, Omote S, Takizawa A, Masao N, Hyon H, Nishida S, Horie M. (1981). Comparison of coronary arteriographic findings during angina pectoris associated with S-T elevation or depression. Am J Cardiol. 47(3):539-546.
8. Davies O, Ajayeoba O, Kurian D. (2014). Coronary artery spasm: An often overlooked diagnosis. Niger Med J. 55(4):356-358.
9. Chazan R, Droszcz W. (1992). Zmiany elektrokardiograficzne u chorych z obturacja dróg oddechowych [Electrocardiographic changes in patients with airway obstruction]. Pol Arch Med Wewn. 87(4-5):237-241.



This work is licensed under Creative Commons Attribution 4.0 License

To Submit Your Article Click Here: [Submit Manuscript](#)

DOI: [10.31579/2692-9759/029](https://doi.org/10.31579/2692-9759/029)

Ready to submit your research? Choose Auctores and benefit from:

- fast, convenient online submission
- rigorous peer review by experienced research in your field
- rapid publication on acceptance
- authors retain copyrights
- unique DOI for all articles
- immediate, unrestricted online access

At Auctores, research is always in progress.

Learn more <https://auctoresonline.org/journals/cardiology-research-and-reports>