Case Report

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Unruptured Ventricular Septal Dissection Complicating Anterior Wall Myocardial Infarction

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ABSTRACT

Interventricular septal dissection is a rare Complication of the interventricular septum. It may result from an aneurysm of the sinuses of Valsalva, bacterial endocarditis, trauma, cardiac surgery, Myocardial infarction, endomyocardial biopsy, or a congenital myocardial developmental anomaly. Postmyocardial infarction ventricular septal rupture (VSR) is a rare complication (1/1000), and ventricular septal dissection is an even less common complication with only five case reports previously described, But unruptured post Myocardial Infarction (MI) dissection is even rarer with only one reported study before. In this case report we describe an unruptured post-MI Interventricular septal dissection following anterior wall MI.

Introduction

Interventricular septal dissection is a rare anomaly of the interventricular septum. It may result from an aneurysm of one of the sinuses of Valsalva, bacterial endocarditis, trauma, cardiac surgery, Myocardial infarction, endomyocardial biopsy, or a congenital myocardial developmental anomaly [1]. Postmyocardial infarction ventricular septal rupture (VSR) is a rare complication (1/1000), and ventricular septal dissection is an even less common complication with only five case reports previously described [2-7], the first case report was in 1988. But unruptured post Myocardial Infarction (MI) dissection is even rarer with only one reported study [6] before.

Case Presentation

A 60-year-old lady with a history of hypertension, chronic kidney disease and a positive exercise tolerance test (ETT) 1 year ago, presented with acute chest pain and anterior ST-elevation Myocardial infarction (STEMI). The patient treated with fibrinolytic (reteplase), after this treatment, she had multiple Ventricular Tachycrdia (VT) and has been cardioverted several times. Because of ongoing chest pain and arrythmias transferred to our center for Rescue Percutaneous coronary intervention (Rescue PCI). The vital signs were stable at the time of arrival. Transthoracic echocardiography revealed a large interventricular septal dissection without septal defect or interventricular shunt (Fig. 2) then

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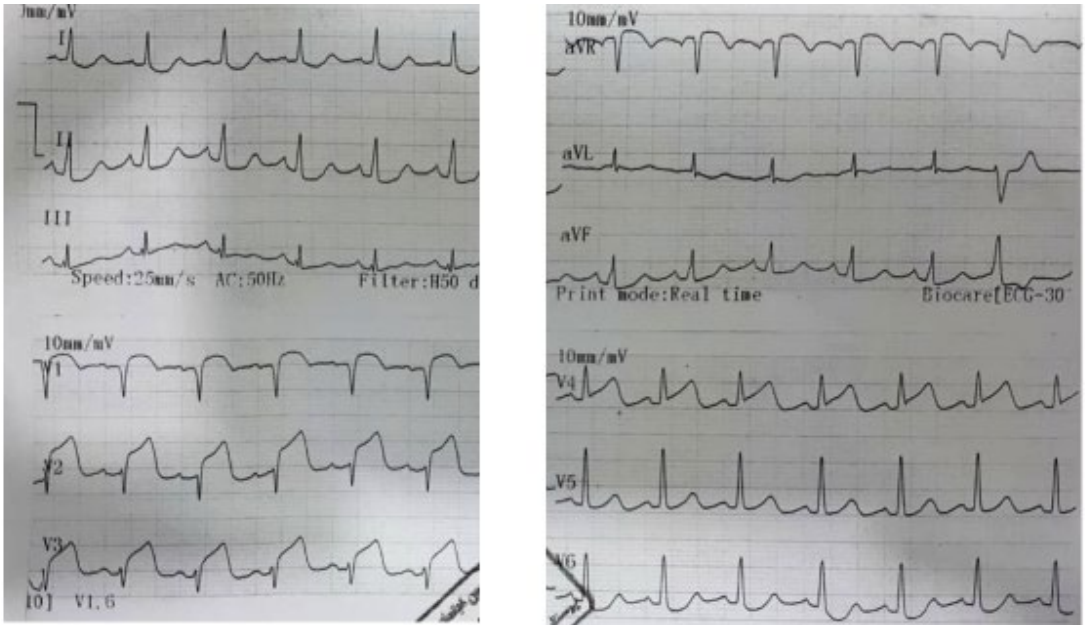

Fig. 1. ECG shows marked Q wave and ST-elevation in V1-V4

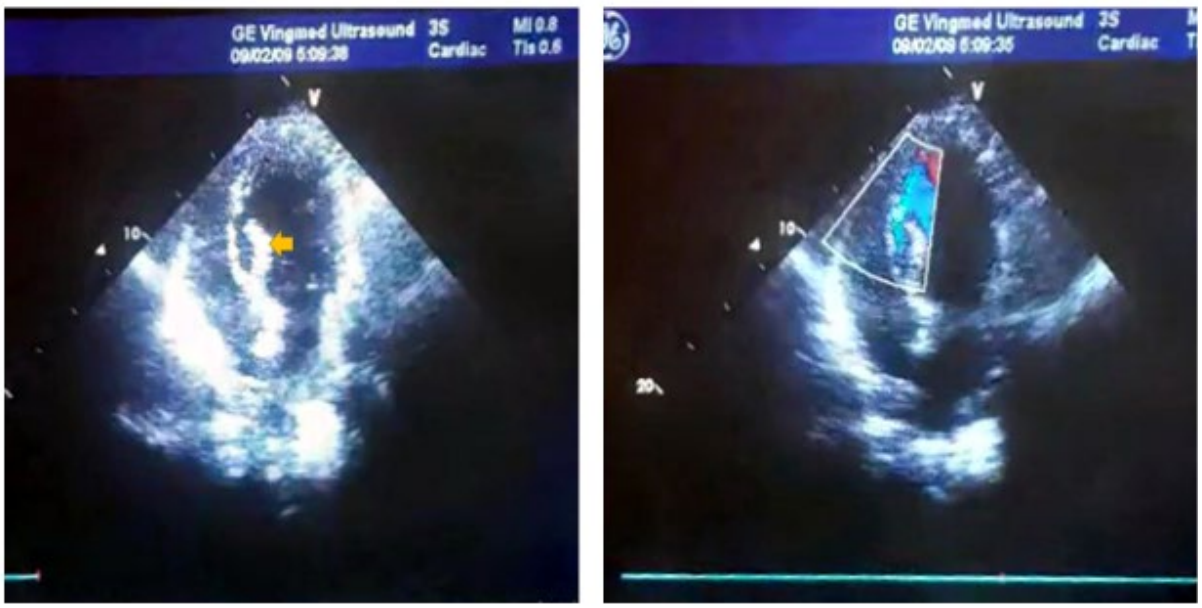

Fig. 2. Left; Apical 4-chamber view showing flap of dissection (arrow), Right; Color dupler showing no shunt between ventricles

she underwent coronary angiography where the Left anterior descending artery (LAD) was cut off at midpart without antegrade run-off, other coronaries was also diseased. Therefore, immediately transferred to the operating room for coronary artery bypass grafting and septal repair. After that she was transferred to Intensive Care Unit (ICU). But a few hours later, she had a cardiac arrest and unfortunately died.

Discussion

Post-myocardial Infarction (Post-MI) ventricular septal dissection is a very rare complication with only six case reports, previously described [2-7], and unruptured post MI dissection is even rarer with only one reported study [6] before. Transmural MI underlies rupture of the ventricular septum. It can be a direct through-and-

through opening or more irregular and serpiginous. Rupture of the septum can be with an anterior wall infarction and inferior wall. Rupture of the septum can be with an anterior wall infarction tends to be apical in location, whereas inferior infarctions are associated with perforation of the basal septum and have a worse prognosis than those in an anterior location [8]. As in our case, after an anterior wall MI, the flap of dissection starts from the apical part (as seen in Fig. 1) and continues to the septum, which remains attached to the base of septum.

Clinical features associated with increased risk for rupture of the interventricular septum include lack of development of a collateral network, advanced age, female sex, and chronic kidney disease. Because the previous ischemia induces myocardial preconditioning, thereby decreasing the likelihood of transmural myocardial necrosis and septal rupture, patients with evidence of hypertension, diabetes mellitus, chronic angina, or previous MI are less likely to experience rupture [8]. In our case, the patient had female gender and chronic kidney disease as risk factor although hypertension and a history of ischemia (positive ETT) had as a protective factor for that. The Inter ventricular septum (IVS) dissection is likely to continue to become a septal rupture in the absence of perfusion.

No optimal management for the Post MI IVS dissection has been defined yet. All Mariscalco [6] decided for conservative management because of stable clinical setting of patient and no viable myocardium in Left anterior descending artery territory and absence of flow in dissection; but we had to undergo emergency surgery because of our unstable condition.

Conclusion

Post-MI ventricular septal dissection is a very rare complication that can be diagnosed by transthoracic echocardiography. On the basis of our experience, we think in the early hours of Post-MI the patient can become unstable, so the best strategy is emergent surgery for reperfusion and repair.

Ethical Considerations

Permission was obtained from the patient's family to publish her medical documents anonymously for a scientific article.

Compliance with ethical guidelines

There were no ethical considerations to be considered in this article.

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Conflict of Interests

The authors have no conflict of interest to declare.

References

1. Gu, X., He, Y., Luan, S., Zhao, Y., Sun, L., Zhang, H., Nixon, J. I. (2017). Dissection of the interventricular septum: Echocardiographic features. Medicine, 96(10). https://doi.org/10.1097/MD.0000000000006191

2. Nakata, A., HIROTA, S., Tsuji, H., Takazakura, E. (1996). Interventricular septal dissection in a patient with an old myocardial infarction. Internal medicine, 35(1), 33-35. https://doi.org/10.2169/internalmedicine.35.33

3. Tanoue, K., Sata, N., Amitani, S., Yamashita, T., Moriyama, Y., Miyahara, K. (2006). Interventricular septal dissection after acute myocardial infarction. The Annals of thoracic surgery, 82(2), 751. https://doi.org/10.1016/j.athoracsur.2005.05.032

4. Hirose, S., Kanemoto, N., Matsuyama, S. (1988). Ventricular septal dissection: a case report. Journal of cardiology, 18(2), 575-581.

5. Rumoroso, J. R., Arriandiaga, J. R., Rodrigo, D., Montes, P. M., Irigoyen, J. M., Arrizabalaga, J. I., Froufe, G. (1994). Septal dissection in a ventricular septal rupture. Texas Heart Institute Journal, 21(3), 238.

6. Mariscalco, G., Blanzola, C., Leva, C., Cattaneo, P., Mantovani, V., Ferrarese, S., Sala, A. (2006). Unruptured ventricular septal wall dissection. The Journal of cardiovascular surgery, 47, 349-52.

7. Kalvin, L., Yousefzai, R., Khandheria, B. K., Paterick, T. E., Ammar, K. A. (2017). Ventricular septal dissection complicating inferior wall myocardial infarction. Case Reports in Cardiology, 2017. https://doi.org/10.1155/2017/9680891

8. Westaby, S., Kharbanda, R., Banning, A. P. (2012). Cardiogenic shock in ACS. Part 1: prediction, presentation and medical therapy. Nature Reviews Cardiology, 9(3), 158. https://doi.org/10.1038/nrcardio.2011.194