

Case Report

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The Clinical Challenge of Distinguishing between Happy Heart and Broken Heart Syndromes

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ABSTRACT

Takotsubo Cardiomyopathy (TC), or stress-induced cardiomyopathy, is an acquired cardiomyopathy which is famously attributed to tragic or stressful life events. Triggers for TC are notable to be physical or emotional, with surgery and death of a loved one as examples. More recently and considerably less common, TC has been recognized following joyous events, which has been referred to as the Happy Heart Syndrome (HHS). Here we describe a case of HHS in a 62-year-old female who presented to an emergency department with chest pain and shortness of breath precipitated by receiving good news about the recovery of her critically ill husband. Furthermore, we discuss the diagnostic challenges in identifying the trigger and categorization of this condition.

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Introduction

The relationship between tragic or stressful life events and development of TC has been well established since its first documentation in the 1990's. Proposed Mayo Clinic criteria for the diagnosis of TC include the characteristic transient left ventricular wall motion changes, the absence of obstructive coronary disease, new ECG abnormalities, and the absence of pheochromocytoma or myocarditis [1]. These diagnostic criteria indicate that a stressful trigger is often, but not always present. Examples of triggering events include sudden loss of a loved one, natural disaster, or trauma. This has led to the condition being referred to as the "Broken Heart Syndrome" (BHS).

Cardiomyopathy following a joyous event has been called the HHS which has been increasingly recognized through international registries. A recent review of stress-induced cardiomyopathies reported that less than five percent of cases were consistent with HHS [2]. Positive triggers noted to invoke HHS have included birthday parties or celebrations, weddings, and receiving good news. Males tend to develop HHS at a higher frequency when compared to BHS. Another differentiating characteristic is a nonapical ballooning pattern of the left ventricle. The following case presents a diagnostic challenge in the classification of HHS and emphasizes the importance of clinical history in distinguishing between the two conditions.

Clinical Case

A 67-year-old man presents at 6:00 AM with acute chest pain and was found to have an acute anterior STEMI. He was taken for emergent cardiac catheterization, during which he was found to have a 100% thrombotic occlusion of the proximal left anterior descending artery. During percutaneous intervention, the patient

experienced an episode of ventricular fibrillation requiring defibrillation. The patient's wife was updated on his diagnosis and the events which occurred in the catheterization lab. Following successful revascularization, the patient was transferred to the intensive care unit in critical condition. The following morning at 9:00 AM, the patient's hemodynamics remained stable and no further complications were noted. Again, the patient's wife was updated, although now tearful and overwhelmed with joy, she hugged every team member in gratitude.

At approximately 1:00 PM, the patient's wife complained of mid-anterior retrosternal chest pressure associated with shortness of breath and diaphoresis. An EKG revealed mild ST segment elevation in the anterior leads. Troponin was mildly elevated. She then too was taken emergently for cardiac catheterization, although she did not have any epicardial coronary disease. Ventriculogram showed apical ballooning with a hyperkinetic base (Figure), consistent with TC. The patient was medically managed and repeated echocardiography four weeks later showed recovered ventricular function with normal wall motion.

Discussion

There is an emphasis on clinical history and classification of emotional triggers as joyous or stressful to differentiate between HHS and BHS. This case poses a challenge in classification of BHS or HHS as two triggers were identified: one tragic event which includes the patient's husband becoming critically ill, and then a joyous event with the news of the unexpected recovery of her husband. Current literature describing HHS has focused on distinguishing the clinical course, risk factors, and objective findings between BHS and HHS [2]. It is important to note the elapsed time between an identified trigger and development of

symptoms. In this case, the patient had experienced her traumatic event 28 hours prior to development of symptoms and her joyous event only four hours prior.

Identifying multiple potential triggers challenges the dichotomy of the recently described subtypes of BHS and HHS. Many positive stressors are preceded by negative stressors or anxiety regarding the stressor. For example, a cancer patient may have significant anxiety anticipating the results of an important test, which precedes the eventual relief and positive emotion when they are told of their cure or benign findings. Under these conditions, there is difficulty in identifying the actual trigger in this patient population, making HHS difficult to distinguish from BHS.

If less than five percent of TC cases in a large registry are noted to be consistent with HHS, it is far more likely that the trigger in this case would have been the tragedy of her husband's critical illness. Postmenopausal females are noted to be the demographic group at highest risk for developing BHS [3]. Furthermore, this patient had the characteristic apical ballooning of her left ventricle that is well described and more likely in BHS [2]. The left ventricle apical ballooning pattern has been described in 87% of BHS cases compared to 73% of HHS cases. An atypical, nonapical ballooning pattern was present in 27% of HHS cases within this same cohort which was noted to be a significant difference from a prevalence of 12.5% in BHS. While atypical patterns occur more frequently in HHS, the typical ballooning pattern remains the most common presentation which would not be helpful in distinguishing between these conditions. Increased sample size of HHS would further clarify differences between the two syndromes although understandably difficult with such a rare condition.

Regardless of the classification of the emotional trigger, the clinical course and complications noted between emotional triggers does not reveal significant differences between HHS and BHS [2]. Again, this could be due to the small sample sizes of HHS. In the case presented here, the patient had spontaneous recovery of her left ventricular dysfunction within one month of the inciting event. Overall, this clinical course is consistent with the reports in literature [4].

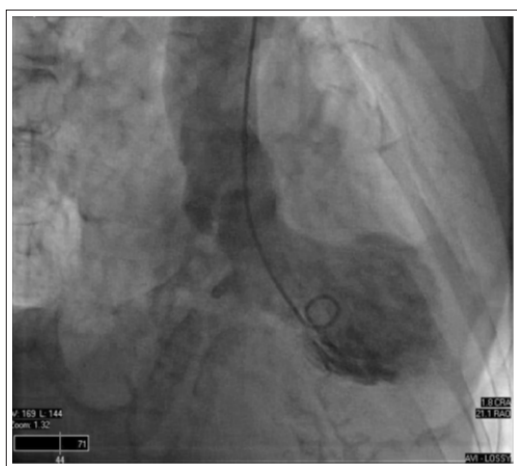


Figure: Ventriculogram

Conclusion

In up to one-third of cases of TC, no known physical or emotional trigger can be identified. HHS may be underrecognized as joyous triggers are not routinely considered as inciting events. Distinguishing and reporting the elapsed time between emotional trigger and symptom presentation could help classify cases in

which multiple triggers could be identified. Further documentation of HHS and clarification of diagnostic criteria would be helpful in distinguishing between these two conditions.

References

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