



TAKOTSUBO CARDIOMYOPATHY IN MALE PATIENT AFTER EMERGENCY SURGERY FOR PERFORATION PERITONITIS SECONDARY TO ABDOMINAL KOCHS : CASE REPORT

Medical Science

Maj (Dr) Yogesh Kukreja

Graded Specialist (General Surgery), Military Hospital, Jamnagar

Lt Col (Dr) N Rishikanta*

Classified Specialist (Internal Medicine), Military Hospital, Jamnagar *Corresponding Author

Lt Col (Dr) A K Sharma

Graded Specialist (Anaesthesiology), Military Hospital, Jamnagar

Capt (Dr) Patel Vivek Dineshbhai

Medical Officer, Military Hospital, Jamnagar

ABSTRACT

Takotsubo cardiomyopathy also known as Stress induced Cardiomyopathy, is a transient, reversible left ventricular dysfunction initially reported by Japanese authors in post menopausal women. It is usually triggered by sudden emotional and physical stress and is proposed to be response of catecholamine release due to stressful event, resulting in temporary myocardial damage. The condition mimics myocardial ischemia without any coronary artery lesion and with typical ballooning of left ventricle on echocardiography. It usually has a benign course and treatment is symptomatic has a favourable prognosis. It may recur and can result in sudden cardiac death with heart failure, pulmonary edema, arrhythmia, acute myocardial infarction and cardiac rupture. We report the case of a 28 year old male patient who underwent Emergency laparotomy for illeal perforation and diagnosed to have Abdominal Kochs on histopathological examination and developed stress induced cardiomyopathy in post operative period.

KEYWORDS

Takotsubo, Cardiomyopathy, Stress, abdominal Kochs

Introduction

In 1991 Dote et al (1) first reported about stress induced cardiomyopathy or Takotsubo cardiomyopathy (tako : octopus and tsubo : pot) in Japan. It is also known as ampulla cardiomyopathy, broken heart syndrome, idiopathic apical ballooning syndrome and stress induced myocardial stunning. It is common among post-menopausal women (Mean age 58 to 77 yrs) with no significant past history and is usually precipitated by sudden emotional or physical stress (2,3). Surgery is both physiological and psychological stress for patients (4, 5). Patients also get exposed to various complications such as postoperative infections (6), pain (7). Therefore, it can develop during the postoperative period (8). Cases have been reported in patients during or after surgery and even on induction of anaesthesia (9,10,11). A study conducted in Seoul National University Bundang Hospital (SNUBH) concluded that the prevalence of condition in post op period is approx 17.74 patients per 100,000 adult patients and factors that increase the risk are higher ASA score, preoperative hyponatremia, and higher preoperative BMI (12). We report a case of 28 year old male patient who underwent Emergency laparotomy for illeal perforation and diagnosed to have Abdominal Kochs on histopathological examination and developed stress-induced cardiomyopathy in post operative period.

Case Report

28 year old male with no known comorbidities presented with complaints of severe pain abdomen of 12 hrs duration. Clinically patient was diagnosed to have perforation peritonitis. X Ray abdomen showed free gas under diaphragm [Figure 1] and CECT abdomen revealed possibility of illeal perforation. Patient was taken for emergency laparotomy under GA in ASA II E with high risk and stoma consent.



Figure 1 : Free gas under diaphragm

Pre op patient had a pulse rate of 120 to 160 beats per min [Figure 2] and Blood Pressure of 130/90 mm Hg. For induction of anaesthesia, patient was pre medicated with midazolam for anxiolysis and Fentanyl for analgesia and induction was done with Inj Propofol. Muscle relaxation was achieved with atracurium after confirming the loss of consciousness, and endotracheal intubation was performed. Anaesthesia was maintained with O₂ + N₂O [1: 2] and isoflurane 1-2 Vol%. His vital signs during surgery were maintained with a BP [72-150/60-106 mm Hg], HR [120 – 160 beats per min] and SpO₂ [99-100%]. Post op analgesia was given by Fentanyl patch and an infusion of midazolam and fentanyl on sos basis.

Patient per op detected to have illeal perforation 50 cm from IC junction with purulent fluid in abdomen. [Figure 2] An ileostomy with DMF and resection of 15 cm of diseased segment was done.



Figure 2: Illeal perforation

Post op patient had persistent tachycardia 110 to 170 beats per min for initial four days [Figure 4] and was managed conservatively with observation, adequate analgesia, closed monitoring and correction of electrolyte imbalance, dehydration and nutrition. Pulse rate of the patient settled on Post Op Day 5.

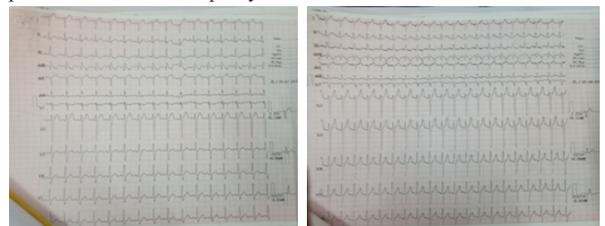


Figure 3 : Pre op ECG

Figure 4: ECG on POD 1

Patient was made to ambulant and stoma became functional on Post Op Day 2, started on oral feeds on day 4 and wound was closed on day 10.

Histopathology of the ileal segment revealed Granulomatous inflammation with submucosal fibrosis and stricture formation suggestive of Abdominal Kochs and patient was started of Anti Tubercular treatment.

Post Op Day 18 patient had a bout of vomiting and again started having tachycardia [Figure 5]. A thorough evaluation was done to rule out causes of same. All haematological and biochemical parameters were WNL. Chest ray and USG abdomen normal study. CECT abdomen also revealed no leak or perforation.

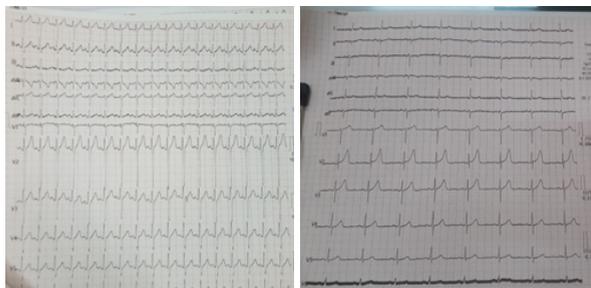


Figure 5 : ECG on POD 18

Figure 6 : ECG on POD 45

2D echo was ordered and was suggestive of Left Ventricle systolic dysfunction with global hypokinesia, Ejection Fraction of 35 to 40 percent and mild Pulmonary Artery Hypertension.

A diagnosis of Stress induced cardiomyopathy aka Takotsubo cardiomyopathy was made and patient was started on supportive treatment to which patient responded well. Patient pulse rate settled gradually [Figure 6] with conservative treatment and his echo findings also normalized. Patient is at present is on regular follow up and is on his path of recovery and is on treatment for Abdominal Kochs and is planned for restoration of gut.

Discussion

Takotsubo cardiomyopathy is a reversible condition usually precipitated by physical or psychological stress and surgery is both physical and physiological stress. In approx 2 % cases of suspected acute myocardial infarction it may get detected (13). Approximately 70% of the patients show sympathetic hyperactivity and an increase in catecholamine (14). The patient usually presents with chest pain or dyspnea with some triggering emotional, physical or surgical stress before the event (13). On ECG, there are ST-segment elevations in the precordial leads or T wave inversion in all 12 leads and prolonged Q-T interval, while a pathologic Q wave also is found in 40% of patients (13). The cardiac enzyme are normal or slightly increased. Echocardiography shows an abnormal ejection fraction of the left ventricle with apical akinesia or hypokinesia but basal hyperkinesias and various variations in findings have also been known while the coronary angiography findings show normal or mild coronary arterial disorders (13).

In our case, the reason of persistent tachycardia and features of cardiomyopathy on echo is unclear, but it may be associated with anesthesia, laparotomy, post-operative pain, and excessive psychological or physical stress from the post-operative treatment outcome (15). The patient however continued to be asymptomatic clinically and a full evaluation was carried out to find the cause for same. Chest X ray was normal and CECT abdomen showed no leak. ECG showed only sinus tachycardia and echo revealed global hypokinesia with normal cardiac enzyme levels and angiography of the patient was not done as the patient was asymptomatic. These findings indicated stress-induced cardiomyopathy.

For diagnosing the condition, Mayo criteria includes the following four conditions

- Transient akinesia of the left ventricular apical segments with wall-motion abnormalities extending beyond the coronary arterial distribution on echocardiography
- Absence of coronary disease
- Abnormalities of the ST-segment or T wave on ECG
- Absence of cerebrovascular disease, pheochromocytoma, or other

myocarditis caused by virus (13).

The prognosis of stress-induced cardiomyopathy is favorable with complete recovery of the patients. However it may be accompanied by complications of congestive heart failure and pulmonary edema in 3-46% of patients and its associated mortality is 1-8% (13). There is no established treatment for stress-induced cardiomyopathy but conservative management has been applied empirically according to each symptom, followed by observation of the outcome (16). Our case was also managed conservatively and patient had an uneventful recovery.

Conclusion

Takotsubo syndrome is now increasingly recognised by the medical community. It usually tends to occur during the intra-operative period very rarely it may occur in post operative patients. Therefore, attention should be paid to the development of cardiomyopathy after a surgery. Many facets of this condition is still incompletely understood and current knowledge to guide optimal clinical management is limited and further research is required to understand the disease.

REFERENCES

- Dote K, Sato H, Tateishi H, Uchida T, Ishihara M. Myocardial stunning due to simultaneous multivessel coronary spasms: a review of 5 cases. *J Cardiol.* 1991;21:203-214.
- Brenner ZR, Powers J (2008) Takotsubo cardiomyopathy. *Heart Lung* 37(1): 1-7.
- Vidi V, Rajesh V, Singh PP, Mukherjee JT, Lago RM, et al. (2009) Clinical characteristics of takotsubo cardiomyopathy. *Am J Cardiol* 104(4): 578-582.
- Desborough JP. The stress response to trauma and surgery. *Br J Anaesth.* 2000; 85: 109-117.
- Krohne HW, Slangen KE. Influence of social support on adaptation to surgery. *Health Psychol.* 2005;24: 101-105.
- Khuri SF, Henderson WG, DePalma RG, Mosca C, Healey NA, Kumbhani DJ, et al. Determinants of long-term survival after major surgery and the adverse effect of postoperative complications. *Ann Surg.* 2005; 242: 326-341; discussion 41-43.
- Kehlet H. Surgical stress: the role of pain and analgesia. *Br J Anaesth.* 1989; 63: 189-195.
- Lentschener C, Vignaux O, Spaulding C, Bonnichon P, Legmann P, Ozier Y. Early postoperative tako-tsubo-like left ventricular dysfunction: transient left ventricular apical ballooning syndrome. *Anesth Analg.* 2006; 103: 580-582.
- Nath MP (2016) Post-Operative Takotsubo Cardiomyopathy: Case Report and Review of Literature: How Much we Know. *J Anesth Crit Care Open Access* 4
- Crimi E, Baggish A, Leffert L, Pian-Smith MCM, Januzzi JL, Jiang Y (2008) Acute reversible stress-induced cardiomyopathy associated with cesarean delivery under spinal anesthesia. *Circulation* 117(23): 3052-3053.
- Pfister S, Wagar P, Casserly IP (2010) Stress-related cardiomyopathy in a 31-year-old woman. *AANA J* 78(5): 406-411.
- Oh TK, Song I-A, Park Y-m, Hwang J-W, Jeon Y-T, Do S-H, et al. (2017) Prevalence and risk factors for postoperative stress-related cardiomyopathy in adults. *PLoS ONE* 12(12): e0190065.
- Bybee KA, Kara T, Prasad A, Lerman A, Barsness GW, Wright RS, et al. Systemic review: transient left ventricular apical ballooning: a syndrome that mimics ST-segment elevation myocardial infarction. *Ann Intern Med.* 2004;141: 858-865.
- Pilgrim TM, Wyss TR. Takotsubo cardiomyopathy or transient left ventricular apical ballooning syndrome: a systemic review. *Int J Cardiol.* 2008;124:283-292.
- Prasad A, Lerman A, Rihal CS. Apical ballooning syndrome (Tako-Tsubo or stress cardiomyopathy): a mimic of acute myocardial infarction. *Am Heart J.* 2008;155:408-417.
- Gaibazzi N, Ugo F, Vignali L, Zoni A, Reverberi C, Gherli T. Tako-tsubo cardiomyopathy with coronary artery stenosis: a case-series challenging the original definition. *Int J Cardiol.* 2009;133:205-212.