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Case Report

Tako-Tsubo Syndrome in Chronic Ischemic Heart Disease Triggered by Surgical Stress and Intraoperative Administration of Adrenaline: A Case Report

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Abstract: Takotsubo syndrome (TTS) is an acute reversible cardiomyopathy mimicking acute coronary syndrome (ACS), characterized by transient left ventricular dysfunction. It usually occurs after intense emotional or physical stress. Few cases of TSS in a perioperative setting have been described in the literature. However, recent literature data show an increase in its incidence in the perioperative period in recent years. The prognosis is generally favorable, but the outcome can often be rapidly fatal. We report a case of Takotsubo syndrome that occurred immediately after surgery in a 55-year-old patient with chronic coronary artery disease who underwent right middle lobectomy with lymph node dissection. The event was triggered by an episode of severe hypoxia and an injection of adrenaline. The diagnosis was confirmed by echocardiography (LVEF 25%, circumferential apical akinesis) and coronary angiography (chronic bifocal stenosis without acute occlusion). The outcome was favorable after symptomatic treatment and hemodynamic suppor, with complete recovery of left ventricular function. This observation illustrates the possibility of TST in a surgical setting in coronary patients. We also describe the diagnostic and therapeutic aspects of this rare perioperative complication.

Keywords: Takotsubo, Stress Cardiomyopathy, Surgery, Adrenaline, Acute Coronary Syndrome, Perioperative.

INTRODUCTION

Stress cardiomyopathy, also known as Takotsubo syndrome (TS), is an acute cardiac condition characterized by transient left ventricular dysfunction [1, 2]. It generally affects several coronary territories, with a predilection for the apical, mid-ventricular, or basal régions [2]. Very few cases have been reported in the literature.

The etiopathogenesis remains unclear, but a major emotional or physical stress factor is often the trigger [1]. The most widely accepted hypothesis is that of sympathetic hyperstimulation leading to a massive release of catecholamines [3].

Clinically, TTS mimics acute coronary syndrome (ACS) in terms of its symptoms, electrocardiographic abnormalities, and elevated cardiac biomarkers [1-4]. However, it is distinguished by the absence of significant occlusive coronary stenosis on coronary angiography [1].

We add to the literature a case of Takotsubo syndrome occurring immediately after right middle lobectomy with lymph node dissection in a 55-year-old patient with known chronic coronary artery disease. We also describe the diagnostic and therapeutic aspects of this rare perioperative complication.

OBSERVATION

The patient was a 55-year-old man who was being followed up in the thoracic surgery department of our hospital for a previously treated T4N3Mx oropharyngeal carcinoma. During monitoring, a pulmonary nodule was discovered in the right middle lobe, which was progressing and led to the indication for a right middle lobectomy and mediastinal-hilar lymph node dissection. Preoperative assessment revealed

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normal left ventricular function (LVEF 61%), normal respiratory function, normal laboratory tests, and no cerebral or supra-aortic metastases. Following the anesthetic consultation, the patient was classified as ASA 2 and was then declared fit for right middle lobectomy and lymph node dissection.

On July 25, 2025, the patient underwent video-assisted thoracoscopic surgery, which was converted to thoracotomy. Anesthetic induction (AIVOC) and selective intubation using a Carlens tube were performed without incident, with fibroscopic control. Two (2) hours after the start of the procedure, in a context of left lung exclusion, the patient suddenly developed hypoxia (SpO_2 at 80%) associated with elevated insufflation pressures, severe hypotension (50/30 mmHg), and bradycardia (36/min). Manual ventilation was initiated and an emergency intravenous injection of adrenaline (1 mg) was administered, allowing rapid recovery of hemodynamic parameters. Bronchial fibroscopy revealed a thick mucus plug, which was probably responsible for the ventilatory incident. No arrhythmias or intraoperative electrocardiographic changes were observed. The patient was stabilized, awakened, and extubated on the operating table.

Upon arrival in the post-operative care unit, he presented with hemodynamic instability requiring administration of norepinephrine (up to 1.2 mg/h). The ECG showed a slight ST segment elevation in aVL, V1, and V2. Transthoracic echocardiography revealed circumferential apical akinesis extending to the middle segments, with basal hypercontractility, estimating LVEF at 25%. Laboratory tests revealed a marked elevation in troponins (226 ng/L initially, then 5440 ng/L 4 hours postoperatively) and a moderately increased BNP. The overall picture was consistent with stress cardiomyopathy (Takotsubo syndrome), triggered by surgical stress and the administration of adrenaline.

A coronary angiogram performed 12 hours later revealed chronic two-vessel ischemic heart disease (significant stenosis of the middle IVA including the second diagonal and distal CX), without acute vascular occlusion. These results ruled out occlusive ACS and pointed to a diagnosis of Tako-Tsubo on chronic ischemic heart disease.

The treatment initiated combined multimodal analgesia (paracetamol 1 g and nefopam 20 mg every 6 hours, supplemented by a ropivacaine infusion via a paravertebral catheter), an antiplatelet agent (aspirin 75 mg), anticoagulation with LMWH (4000 IU/day then 6000 IU/12 hours depending on anti-Xa activity), and continued noradrenaline (2 mg/hour).

Close monitoring was implemented, including consciousness, heart rate, invasive blood pressure, ECG monitoring (DII–V5), regular 12-lead ECGs, troponin kinetics, hemoglobin, and chest drainage (suction –20 cm H_2O).

The subsequent course was favorable, with gradual improvement in LVEF (40% on day 4, >50% on day 5), complete withdrawal of amines on day 7, and hemodynamic normalization. The chest drain was removed on postoperative day 3.

However, the patient developed left-sided infectious pneumonia on postoperative day 4 without microbiological documentation, which was effectively treated with cefotaxime (1 g) and metronidazole (500 mg) every 8 hours for 7 days, and transient biological cholestasis that resolved upon discontinuation of antibiotic therapy.

On day 11, the patient was stable from a respiratory and cardiovascular standpoint: eupneic in ambient air, apyretic, with near-normal left ventricular function (LVEF 55%, residual apical septal hypokinesia). He was transferred from the post-operative continuous care unit to the cardiology department for further treatment and planning of a delayed angioplasty.

DISCUSSION

TTS is an acute reversible cardiomyopathy that generally occurs after significant stress [1, 2]. It usually occurs in postmenopausal women. TTS is very rarely documented in men in a surgical context [1]. The case presented illustrates this particular situation, with onset linked to an episode of severe hypoxia and the administration of adrenaline.

The pathophysiological mechanisms involved include massive release of catecholamines, microcirculatory coronary vasoconstriction, and desynchronization of sympathetic activation [3]. In a perioperative setting, surgical stress and pharmacological agents (vasopressor amines) are major triggers [5-8].

In a meta-analysis by Lin *et al*., [5], of 101 cases of perioperative TTS, the main triggers were physiological factors followed by emotional factors (surgical stress). They observed that the median age was 55 years.

In our patient, physiological and emotional factors (medical and surgical stress) were also observed.

Cases of TST have been reported after procedures such as percutaneous mitral valve repair [9], or oncological surgery with HIPEC [10].

In terms of diagnosis, TTS frequently mimics ACS due to its ECG and biological abnormalities [4]. In our observation, coronary angiography revealed significant chronic ischemic heart disease without acute

occlusion, confirming the diagnosis of Tako-Tsubo on coronary grounds. This association illustrates the difficulty of diagnosis and highlights the importance of early coronary angiography. Furthermore, the rapid progression and frequent lack of suspicion of the diagnosis on the part of practitioners show that TTS is probably underdiagnosed in surgical settings.

In terms of treatment, management is based on symptomatic treatment and hemodynamic support. Conversion enzyme inhibitors appear to be the only class of drugs associated with improved survival [6]. In severe cases, the use of mechanical support (ECMO, Impella, IABP) has shown survival rates of over 80% and functional recovery in over 60% of cases [7].

Regarding prognosis, according to the literature, the outcome is generally favorable with recovery of LVEF within an average of two weeks [5]. In our observation, the outcome was also favorable with recovery of LVEF fter 11 days of treatment. Our results corroborate the data in the literature.

However, in the absence of rapid diagnosis and appropriate treatment, TTS is associated with high morbidity and mortality, comparable to that of myocardial infarction [11]. In the meta-analysis by Lin *et al*., [5], hospital mortality was 6.9%. This mortality could be observed some time after the acute phase, which justifies close cardiological follow-up.

CONCLUSION

Takotsubo syndrome (TTS) is a rare condition but can be fatal in the absence of rapid diagnosis and appropriate management. Practitioners should consider TTS when faced with signs suggestive of acute coronary syndrome in the perioperative period. We have reported a case that illustrates the possibility of TTS occurring in chronic ischemic heart disease, triggered by surgical stress and the administration of adrenaline, which was diagnosed in the presence of unexplained hemodynamic instability in the immediate postoperative period. Greater awareness of TTS among medical and surgical teams is essential in order to optimize diagnosis and management.

Conflict of Interest: None

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