

Single Case – General Neurology

Myocardial Injury and Stroke after Attempted Suicide

Bruno Bertoli Esmanhotto^{a, b} Carolina Rodrigues Laranjeira Vilar^b
Juliana Carla Hecke^a Bruna Veroneze^a Wolner Fernandes de Lima^c

^aDepartment of Internal Medicine, Hospital e Maternidade São José dos Pinhais, São José dos Pinhais, Brazil; ^bFaculty of Medicine, Faculdades Pequeno Príncipe, Curitiba, Brazil;

^cDepartment of General Surgery, Hospital e Maternidade São José dos Pinhais, São José dos Pinhais, Brazil

Keywords

Stroke · Cardiac injuries · Self-stabbing

Abstract

Self-stabbing is an uncommon method of suicide and attempt of suicide, mostly chosen by young men and people with a psychiatric history. A curious case of suicide attempt by self-stabbing with a huge pointed knife in a 56-year-old man is presented which resulted in a myocardial injury and was evaluated with a stroke after cardiorrhaphy.

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Published by S. Karger AG, Basel

Introduction

Suicide is a serious global public health issue. It is among the top 20 leading causes of death worldwide, with more deaths due to suicide than malaria, breast cancer, war, or homicide. Close to 800,000 people die by suicide every year [1].

Methods that are used in cases of suicide vary among populations and communities, as well as over time. Self-stabbing is an uncommon method of suicide, mostly chosen by young men and people with a psychiatric history [2–4]. The aim of this short report was to present an unusual and rare nonfatal left-sided penetrating thoracic trauma, caused by impaling with a huge pointed knife as a suicide attempt, resulted in a myocardial injury and evolved with a stroke after cardiorrhaphy.

Case Presentation

A 56-year-old man was presented at the emergency room. On initial presentation, the patient was in a prone position, wake oriented (Glasgow Coma Scale of 15), and hemodynamically stable (blood pressure 125/74, heart rate of 80, respiratory rate 16, and O₂ 99% in room air). The external examination revealed penetrating knife injury in the left hemithorax, approximately 4 cm medially to the left nipple. The patient uses fluoxetine 20 mg/day for unipolar depression. Chest tomography depicted pneumomediastinum and pericardial effusion (Fig. 1). He was evaluated by trauma surgery and performed a thoracoscopic pericardial window that demonstrated myocardial injury (Fig. 2).

Thoracotomy was proceeded to repair a left atrial lesion followed by drain chest insertion. Postoperative electrocardiogram was performed with ST elevation in the anteroinferior lateral region, showing ST elevation in V2, V4, D3, and AvF. Transthoracic echocardiography was unremarkable.

One day after, the patient presented disproportionate left hemiparesis and dysphagia. Brain CT scan showed right middle cerebral artery infarction (Fig. 3) without midline shift, compatible with ischemic injury in the acute phase. After 10 days, he remained

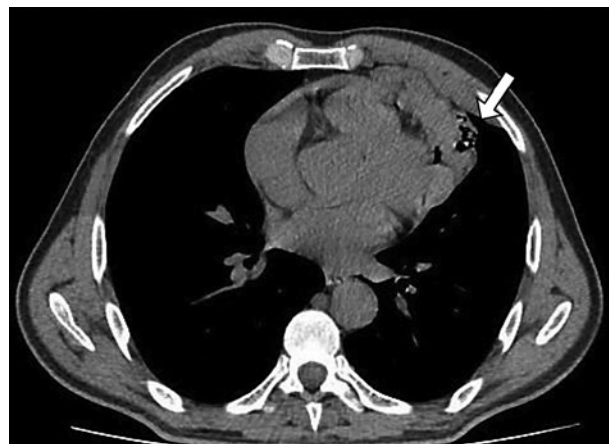


Fig. 1. Chest axial noncontrast CT showing pneumomediastinum (white arrow) and pericardial effusion.

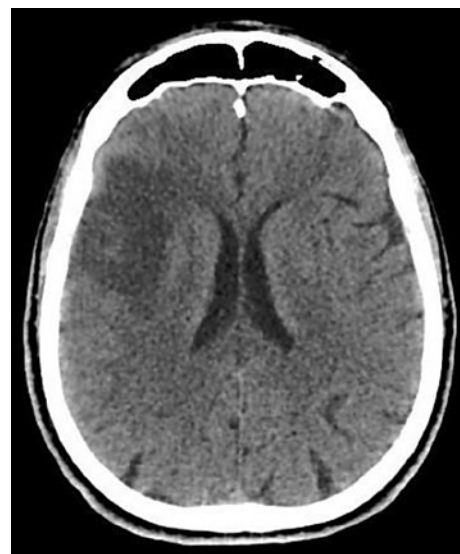


Fig. 2. Brain axial noncontrast CT showing the right MCA infarction. MCA, middle cerebral artery.



Fig. 3. Left atrial rupture (white arrow) viewed by thoracotomy.

partially recovered from neurologic deficit. He was discharged to an inpatient psychiatric facility.

Discussion

In the present case, the unusual presentation of stroke after a left-sided penetrating thoracic trauma, caused by impaling with a huge pointed knife as a suicide attempt was presented, demonstrating the importance of monitoring potential late complications from thoracic injuries, emphasizing stroke as a treatable and potentially fatal cause. Cardioembolic strokes can occur as a consequence of any cardiac insult that could cause the fulfillment of Virchow's triad of endothelial injury, stasis, and hypercoagulability. Commonly encountered causes include atrial disease, structural disease, valvular heart disease, structural and functional ventricular diseases, and myocardial infarction [5]. However, cardioembolic stroke due to myocardial atrial injury and cardiography after suicide attempt is an unusual presentation.

Suicide is a frequent cause of death all over the world, and close to 800,000 people die by suicide every year, but self-stabbing is an uncommon method, constituting no more than 3% of suicides. Although stab wounds of the chest are a relatively common form of penetrating chest trauma, no more than 10.5% of them are self-inflicted [6]. The left hemitorax represents, where it is familiar for the heart, represents the elected site of self-inflicted wounds in a suicide or attempts of suicide [3, 4, 6].

Three criteria are accepted as classical for self-inflicted suicide and attempts of suicide: the presence of several self-inflicted stabs, hesitation marks, and the absence of clothing [2, 3]. However, the presented case did not resemble the classical cases. There was only 1 single incision and no hesitation marks.

Penetrating cardiac injuries have been considered lethal and intractable. However, Rehn presented in 1897 the first successful case of cardiorrhaphy of the right ventricle [7]. About 22–25% of trauma deaths are related to chest injuries, and 90% of cardiovascular lesions are originated from the penetrating trauma [8]. With respect to penetrating cardiac injuries, different ratios between their mechanisms are found in the literature, with predominance of gunshot wounds (24.6%). Stab wounds are less common and account for 10.3% of cases [9].

The overall survival rates of penetrating cardiac injuries range from just under 20 to 81% [8]. However, 60–80% of victims with such injuries die at the scene or on the way to the emergency room, despite advances in rescue and prehospital transport obtained in the last 4 decades [10].

The reported patient was quickly taken to the emergency room after the suicide attempt with self-stabbing in the chest. The hospital had surgeons on standby waiting for the victim brought by the ambulance, and agility in care was essential for the patient's survival.

Traumatic injuries can be classified as immediate, early, and late. The immediate ones are related to hypovolemia, acidosis, hypothermia, and hypercoagulability, which reflect the severity of the lesions and their systemic repercussions [10]. The patient in question shows signs of hypovolemia, which was corrected early in the emergency room.

The most common early complications are acute myocardial infarction, arrhythmias, and infections. The literature about late complications is extensive; however, the most reported are intracardiac shunts, cardiac tamponade, fistulas, embolization, left ventricular pseudoaneurysm, tricuspid regurgitation, aortic regurgitation, mitral regurgitation, congestive heart failure, pericarditis, endocarditis, and iatrogenic coronary artery stenosis [9]. Patients who present themselves with unusual associations represent challenges and learning opportunities. The relevance is even greater when the approach involves different specialties, such as psychiatry, cardiology, thoracic surgery, neurology, and neurosurgery.

Statement of Ethics

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. All personal and identifiable information of the patients were completely anonymized. We strictly followed the guideline of the 1964 Declaration of Helsinki and its related good practice guidelines in writing this case report.

Conflict of Interest Statement

The authors declare that they have no conflicts of interest to declare.

Funding Sources

No grant or support was received.

Author Contributions

B.B.E.: conceptualization of the overall academic content, writing of the preliminary version of the manuscript, and reviewing and approving the final manuscript before submission. C.R.L.V.: cowriting of the preliminary version, editing the final version, and approving it before submission. J.C.H. and B.V.: clinically cared for this patient as physicians. W.F.L.: conceptualization of the academic content related to the surgery.

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