

## **New-Onset of Atrial Flutter After a Blunt Cardiac Injury**

### **Case Report**

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## Abstract

### Background

Atrial flutter is one of the cardiac arrhythmias that can be caused by many conditions. however, blunt cardiac injury which characterized by non-penetrating mediastinal trauma, may be an inciting factor. Blunt cardiac injury can lead to arrhythmia due to myocardial tissue injury. Where atrial fibrillation is more common after non-penetrating chest trauma, Atrial flutter is a rare sequela that has been infrequently reported (Maaliki et al., 2022).

**Keywords:** Cardiac injury, atrial flutter, blunt trauma, sternal fracture.

### Case Presentation

We present a case of a middle-aged male, who presented to the Emergency Department with chest pain, after a motor vehicle accident, ECG was done and it showed an atrial flutter, chest CT also showed a non-displaced sternal fracture. ECG finding was new compared to an old ECG. He was admitted to the medial floor for 1 day for observation, his atrial flutter subsided without any intervention.

### Conclusion

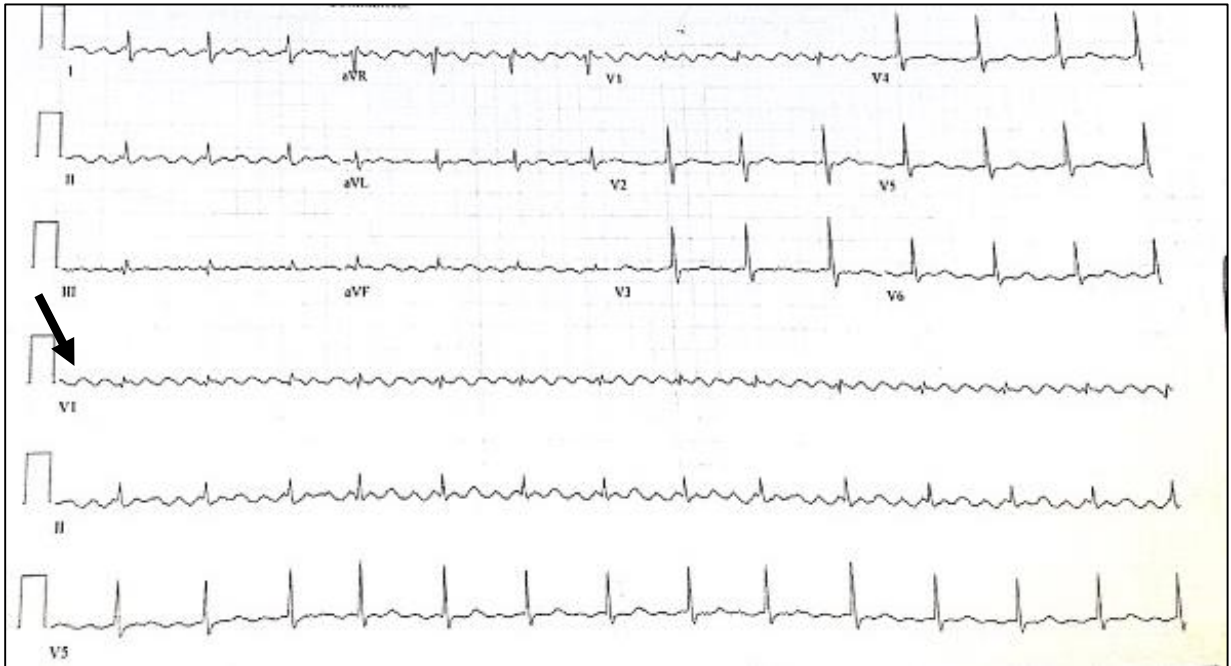
This case describes an uncommon development of a new onset of atrial flutter. The patient reported chest pain immediately after a motor vehicle accident with the deployment of the airbag against the patient's chest leading to a non-displaced sternal fracture. The blunt cardiac injury was considered as the probable provoking factor for the new-onset atrial flutter. Patients should be evaluated quickly especially if they sustained multiple traumas after a car accident. the patient must be monitored, and ECG and cardiac enzymes should be followed up for at least 24 hours (Turgut et al., 2018).

## Introduction

Blunt cardiac injury is associated with multiple arrhythmias, ranging from benign or transient rhythms to life-threatening dysrhythmias such as ventricular fibrillation. Atrial fibrillation has been the most frequently reported arrhythmia resulting from blunt cardiac injury, with few atrial flutter cases mentioned (Maaliki et al., 2022). The incidence of blunt cardiac injury in all blunt thoracic trauma patients is approximately 20%; however, in patients with severe thoracic injury or multiple injuries, the incidence of blunt cardiac injury may be as high as 76% (Schultz & Trunkey, 2004). A retrospective analysis of 515 cases of blunt chest trauma is presented. The overall thoracic morbidity rate was 36% and mortality rate was 15.5% (Shorr et al., 1987).

## Case presentation

A patient presented to the Emergency Department after a Motor Vehicle Collision. The patient was a restrained driver involved in a rear-ended Motor Vehicle Collision with airbag deployment. The patient was evaluated in the Emergency Department complaining of chest pain. Past medical history was significant for hypertension and hyperlipidaemia. Family history was non-contributory. Social history found the patient to be a non-smoker, he reported drinking 4 glasses of wine a week and denied drug use. On physical examination, the patient was found to have stable vital signs and mid-sternal tenderness to palpation. The physical exam was otherwise unremarkable. An initial EKG was done and found the patient to be in atrial flutter, new-onset compared to a previous EKG.



**Image 1:** New ECG obtain when the patient arrived which showed Atrial flutter rhythm

(black arrow), April 2019



**Image 2:** Old ECG showed a sinus rhythm in Feb 2017

Chest CT found a minimally displaced sternal fracture of the mid sternal body with an anterior hematoma and no retrosternal hematoma



**Image 3:** Thoracic CT scan showing a minimal displaced sternal fracture (white arrow), CT abdomen and pelvic was negative. The patient was admitted to the medical floor for observation.

## Discussion

Blunt cardiac injury (BCI) encompasses a wide spectrum of clinical manifestations, ranging from an asymptomatic myocardial bruise to cardiac rupture and death (Schultz & Trunkey, 2004). A review of the literature found an increased frequency of cardiac injury due to blunt thoracic trauma. one group, published a case report of a patient who suffered a complete heart block requiring pacemaker insertion because of chest injury secondary to Motor Vehicle Collusion (Williams & Elkington, 2008). Another group found a patient in atrial fibrillation with the rapid ventricular response following an injury to the chest secondary to Motor Vehicle Collision; however, in this case, the patient's arrhythmia resolved within 3 hours of the trauma occurring (Turgut et al., 2018). Myocardial contusion secondary to chest injury is not very common but its incidence has been increasing in recent years. This may relate to the absolute increase in automobile accidents as well as to more universal recognition that cardiac damage may have been sustained.

## Conclusion

Blunt cardiac injury is termed as cardiac damage due to non-penetrating trauma to the heart and is mostly caused by motor vehicle accidents (Maaliki et al., 2022). It may cause transient or permanent rhythm disturbances or right ventricular dysfunction, and these complications must be evaluated early (Schultz & Trunkey, 2004). Because there may be delayed presentation of heart symptoms resulting from heart trauma, this evaluation was also inconsistent, in addition, holding a patient with any type of chest trauma for 48 to 72 hours

for observation and monitoring is cost ineffective (Williams & Elkington, 2008). If a patient suffers blunt chest trauma, a successful outcome depended upon prompt recognition, supportive measures, and definitive therapy. Definitive therapy ranged from pericardicentesis to open-heart operation (Madoff & Desforges, 1972).



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