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## Case Study

### A Case Report – The Case Of The “Non-Torsade

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#### ABSTRACT

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Elderly man, 91 years age, with non intentional tremors, presented to the intensive care with aspiration pneumonia and non ST elevation myocardial infarction (NSTEMI). During the stay patient developed ECG changes on monitor which resembled an atrial flutter. The following day the ECG was noted to have changes similar to Torsade De Pointes. On closer evaluation of the ECG, they were both found to be artefacts..Artefacts can be seen on ECG which might resemble fatal arrhythmias, recognition of this phenomenon is necessary to avoid unnecessary and inappropriate management.

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**INTRODUCTION:**

Elderly man, 91 years age, with non-intentional tremors, presented to the ICU with aspiration pneumonia. Patient had non-ST elevation myocardial infarction (NSTEMI) with deep T inversions and elevated cardiac biomarkers

On 3rd day of admission he was found to have an abnormal rhythm on the monitor which resembled atrial flutter (see Figure 1). However, the patient was completely asymptomatic and hemodynamically stable. On careful evaluation of the ECG the QRS intervals were constant and heart rate on ECG was in physiological range. Other causes of fixed heart rate with flutter were ruled out like underlying hyperkalemia, complete heart block and digoxin toxicity (Patient was not on digoxin). The rhythm appeared to revert back on its own without any intervention.

The next day patient developed an ECG which resembled Torsades on the multiparameter bedside monitor (which was sent on lead 1). (see figure 2). The doctor also checked the leads and selected lead 2 and lead 3 which also showed similar changes. However the patient was asymptomatic and completely stable. The doctor on duty felt the need to give inj magnesium sulfate in view of torsade. However, the rhythm did not revert with the magnesium sulphate and then appeared to revert back spontaneously after 5 minutes. Meanwhile a 12 lead ECG was done. On careful evaluation of ECG there were QRS spikes seen in the precordial leads which were distinct and regular which were interspersed in between the waves which resembled Torsades.

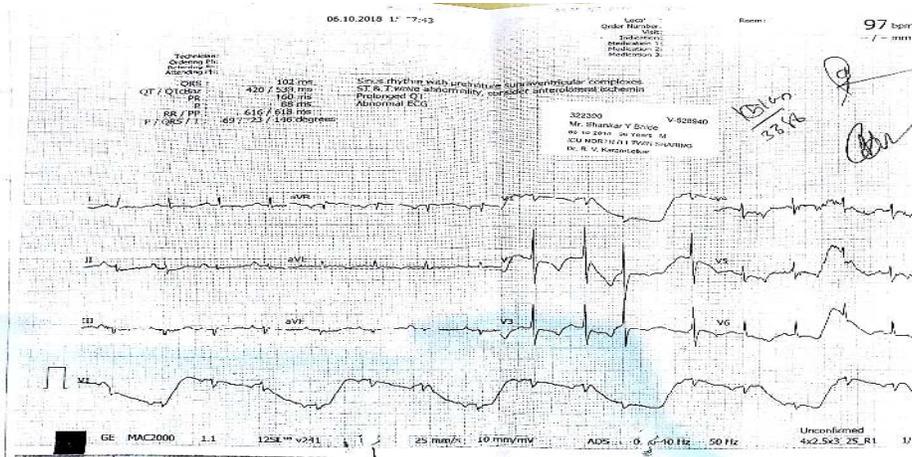


Figure 1

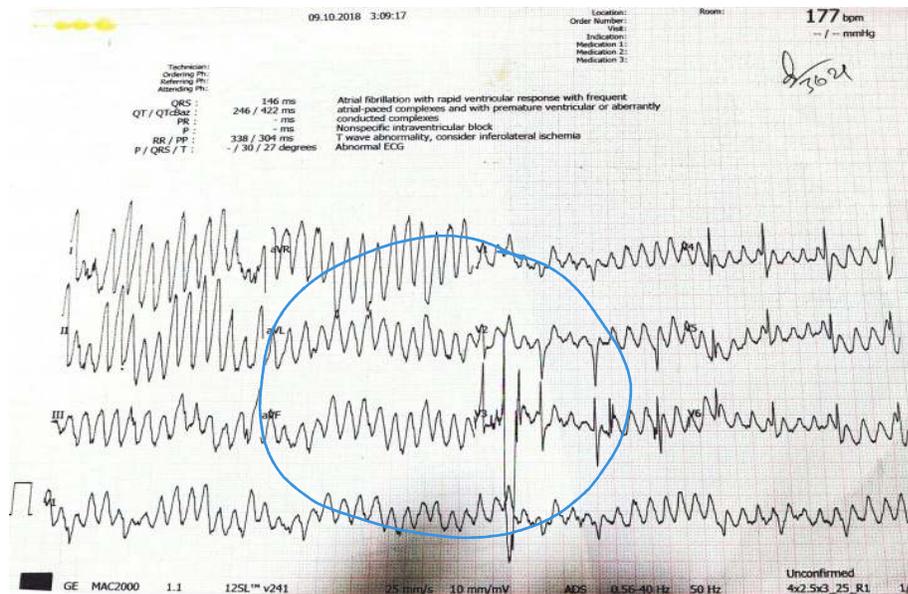
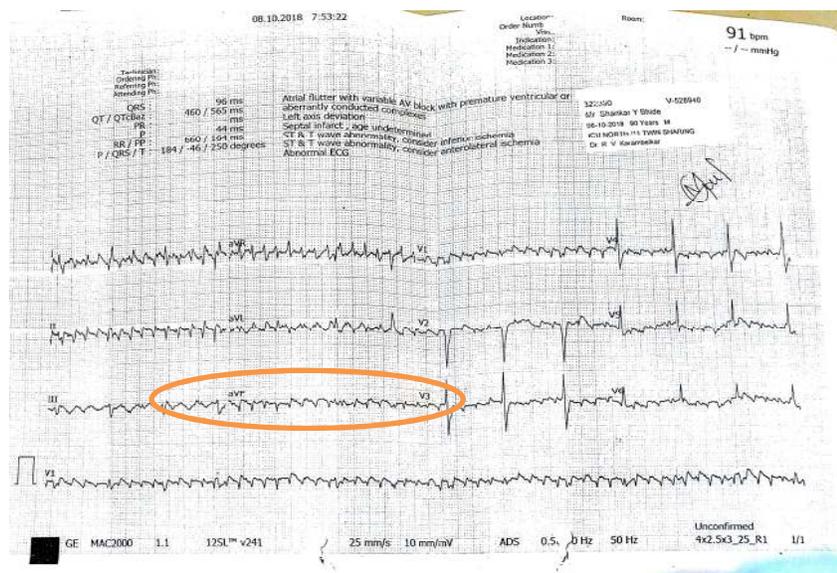


Figure 2



## DISCUSSION:

Iatrogenic causes are 4th largest cause of death in US. Clinical misjudgments can lead to unnecessary therapy. In this patient, though the first look appearance of ECG resembled flutter however due to certain characteristics like fixed RR interval it was identified as artifacts. Next day there was an artefact which resembled a Torsades.1

Torsades de pointes (TdP) is a potentially lethal condition which may degenerate to ventricular fibrillation and can cause sudden cardiac death. Torsades has a very typical and characteristic crescendo- decrescendo appearance, with irregular QRS complexes appearing to twist around the ECG baseline. For TdP to be diagnosed, patient has to have evidence of both polymorphic ventricular tachycardia and QT prolongation, along with R on T phenomenon.2,3 If TdP occurs, management and urgency of management alters. Also patient was asymptomatic, very much stable hemodynamically, which is very unlikely in the face of ongoing Torsades. This artefact which mimicked Torsades could have originated from the ECG machine or the leads.4

In the given patient the multipara monitor showed features of Torsade on all the three limb leads leading to erroneous interpretation and erroneous treatment.

The cause of such ECG artifacts are numerous which may involve

- 1.wrong placement of electrodes (place)
- 2.improper fixation of the electrodes
- 3.motion artifact
- 4.muscle movement artifact (e.g.- shivering)
- 5.presence of electromagnetic interference
- 6.presence of pacemakers

Whenever an abnormal ECG is seen it is important to rule out an artifact.5 clues to that fact the ECG change may be an artifact may be

- 1.good spo2 trace or arterial trace in the presence of arterial line on the multipara monitor
- 2.patient appearing reasonably stable when compared to the ECG changes seen
- 3.all vital parameters stable for e.g.- blood pressure, respiratory rate
- 4.palpation of pulse manually to rule in artifact.
- 5.performance of a formal 12 lead ECG

In the ICU, misdiagnosing artefacts as flutter or TdP may lead to mismanagement of the patient who then get exposed to unnecessary usage of pharmacological and electrical intervention (shock), in an otherwise stable patient.

### CONCLUSION:

Artefacts can mimic physical appearance of flutter or TdP on ECG. A relaxed and careful assessment of clinical status and QRS morphology and clinical status of the patient may avoid unnecessary interventions.

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