A Case of torsades de pointes storm caused by various factors of QT prolongation

Yuki Kimura
Hidemori Hayashi
Hiroki Matsumoto
Haruna Tabuchi
Gaku Sekita
Masataka Sumiyoshi
Yuji Nakazato

**Introduction**: Torsades de pointes (TdP) is a devastating form of polymorphic ventricular arrhythmia associated with QT interval prolongation. Several risk factors of prolonged QT interval have been identified such as female gender, advanced age, hypothyroidism, electrolyte imbalance, cardiac abnormalities, and use of QT prolonging drugs as the most frequent cause.

**Methods**: We present a case of TdP storm caused by various factors of QT interval prolongation.

**Result**: A 20-year-old female presented with convulsive syncope during sleep. Her past medical history was significant for recurrent faintness since her school-days. One year ago, she lost consciousness with her eyes rolled back at night. However, she had never been examined in the hospital because she recovered spontaneously. In this presentation, she lost consciousness again a week after garenoxacin was prescribed for an upper respiratory infection. In the emergency department, she was disoriented but her vital signs were stable and. There were no abnormal finding of her laboratory data and an CT scan of the brain. An ECG demonstrated sinus rhythm with markedly prolongation of QT interval (QTc 0.63ms) and frequent episode of TdP was developed just after admission. Finally, she was required an emergency intubation and electrical defibrillation was attempted repeatedly for electrical storm of TdP. Although Magnesium sulfate was ineffective for TdP storm, combination of lidocaine and landiolol eliminated TdP eventually. Follow-up ECG showed T wave inversion in the inferior and precordial leads. Echocardiogram showed apical wall abnormalities (ballooning), therefore Takotsubo cardiomyopathy was suspected. In addition, serum calcium was 7.4 mg/dL due to pseudo hypoparathyroidism. Cardiac function recovered in two weeks, but QT interval prolongation remained (QTc 0.46sec). She has been free of syncope taking an oral beta blocker with bisoprolol 2.5mg once a day over a 6-month follow up.

**Conclusion**: In conclusion, we report a case of electrical storm of TdP following marked QT interval prolongation by antibiotics, electrolyte abnormality, and Takotsubo syndrome, in a patient suspected for congenital long QT syndrome.