QT interval prolongation

- The effect of transcutaneous auricular vagus nerve stimulation on cardiovascular function in subarachnoid hemorrhage patients: A randomized trial
- Stellate Ganglion Block for Electrical Storm Associated With Takotsubo Cardiomyopathy: A Case Report
- Management of Long QT Syndrome: A Systematic Review
- QTc prolongation after aneurysmal subarachnoid hemorrhage might be associated with worse neurologic outcome in patients receiving microsurgical clipping or embolization of the intracranial aneurysms: a retrospective observational study
- The effect of transcutaneous auricular vagus nerve stimulation on cardiovascular function in subarachnoid hemorrhage patients: a safety study
- Prognostic significance of prolonged corrected QT interval in cerebral contusion
- The mechanism and treatment of targeted anti-tumour drugs induced cardiotoxicity
- Evaluation of index of cardiac-electrophysiological balance in patients with subarachnoid hemorrhage

---

QT interval prolongation refers to the lengthening of the QT interval on an electrocardiogram (ECG). The QT interval represents the time it takes for the heart's ventricles to depolarize (contract) and then repolarize (relax). When this interval is prolonged, it indicates that the heart's electrical system is taking longer than normal to recharge between beats.

Understanding the QT Interval: QT Interval Measurement:

The QT interval is measured from the beginning of the Q wave to the end of the T wave on an ECG. The length of the QT interval can vary depending on heart rate, so it is often corrected for heart rate (QTc) using formulas like Bazett's formula. Normal QT Interval:

The normal QTc interval is generally less than 450 milliseconds (ms) in men and less than 470 ms in women. A QTc interval longer than these thresholds is considered prolonged. Causes of QT Interval Prolongation: Congenital Causes:

Long QT Syndrome (LQTS): A genetic condition caused by mutations in genes that affect the heart's ion channels. These mutations lead to delayed repolarization and a prolonged QT interval. Common subtypes include LQT1, LQT2, and LQT3. Acquired Causes:

Medications: Many drugs can prolong the QT interval by interfering with ion channel function. These include certain antiarrhythmics (e.g., amiodarone, sotalol), antibiotics (e.g., erythromycin), antipsychotics (e.g., haloperidol), and others. Electrolyte Imbalances: Conditions such as hypokalemia (low potassium), hypomagnesemia (low magnesium), and hypocalcemia (low calcium) can prolong the QT interval. Heart Conditions: Myocardial infarction (heart attack), heart failure, and other cardiac conditions can contribute to QT prolongation. Bradycardia: A slow heart rate can lengthen the QT interval. Other Factors:

Metabolic Disorders: Hypothyroidism and other metabolic disorders can be associated with QT prolongation. Nutritional Deficiencies: Deficiencies in essential nutrients like potassium and magnesium can also lead to QT prolongation. Risks Associated with QT Prolongation: Torsades de

Pointes: This is a specific type of life-threatening arrhythmia associated with QT prolongation. It is characterized by a rapid, irregular heartbeat that can lead to fainting, seizures, or sudden cardiac death. Ventricular Fibrillation: QT prolongation can increase the risk of ventricular fibrillation, a condition where the heart quivers instead of pumping effectively, leading to cardiac arrest. Diagnosis: ECG: The primary tool for diagnosing QT interval prolongation is the ECG. Regular monitoring is important for individuals at risk, especially when starting new medications or if they have a family history of LQTS. Holter Monitoring: This involves continuous ECG recording over 24-48 hours to detect intermittent prolongation of the QT interval. Management: Medication Review: Discontinuing or replacing QT-prolonging drugs is a critical step. When certain medications are necessary, close monitoring of the QT interval is required. Correction of Electrolyte Imbalances: Ensuring proper levels of potassium, magnesium, and calcium can help normalize the QT interval. Beta-blockers: These are commonly used in congenital LQTS to reduce the risk of arrhythmias. Implantable Cardioverter-Defibrillator (ICD): In high-risk patients, an ICD may be recommended to prevent sudden cardiac death by correcting dangerous arrhythmias. Lifestyle Modifications: Avoiding triggers like strenuous exercise, stress, and certain medications can help manage QT prolongation. Summary: QT interval prolongation is a significant abnormality that can lead to dangerous heart rhythms, such as Torsades de Pointes and sudden cardiac death. It can be congenital, due to genetic mutations, or acquired, often related to medications or electrolyte imbalances. Management involves careful monitoring, lifestyle modifications, and sometimes medical interventions to prevent serious complications.

QT Interval Prolongation for Subarachnoid Hemorrhage Outcome

- The effect of transcutaneous auricular vagus nerve stimulation on cardiovascular function in subarachnoid hemorrhage patients: A randomized trial
- QTc prolongation after aneurysmal subarachnoid hemorrhage might be associated with worse neurologic outcome in patients receiving microsurgical clipping or embolization of the intracranial aneurysms: a retrospective observational study
- The effect of transcutaneous auricular vagus nerve stimulation on cardiovascular function in subarachnoid hemorrhage patients: a safety study
- Role of electrocardiogram findings in predicting 48-h mortality in patients with traumatic brain injury
- Assessment of the ECG T-Wave in Patients With Subarachnoid Hemorrhage
- Spiked helmet pattern ST elevation in subarachnoid hemorrhage
- Acute Brain Diseases as Triggers for Stress Cardiomyopathy: Clinical Characteristics and Outcomes
- Prolonged corrected QT interval in the donor heart: Is there a risk?

QT interval prolongation is associated with worse subarachnoid hemorrhage outcome, which is independent of perioperative cardiac events [1)]

1)

Zhang X, Lei Y, Nan L, Dong S, Liu Y, Yu J, Xu K, Hou K, Ma H. QTc prolongation after aneurysmal subarachnoid hemorrhage might be associated with worse neurologic outcome in patients receiving microsurgical clipping or embolization of the intracranial aneurysms: a retrospective observational study. BMC Neurol. 2024 May 23;24(1):170. doi: 10.1186/s12883-024-03679-z. PMID: 38783204; PMCID: PMC11112891.