Double Trouble: Lown-Ganong-Levine and long QT syndromes

D. Guerreiro¹, S. Maurício², J.R. Soares³, I. Rodrigues¹

¹ Centro Hospitalar Lisboa Norte
² Instituto Português de Oncologia de Lisboa Francisco Gentil
³ Centro Hospitalar Universitário do Algarve

BACKGROUND

LOWN-GANONG-LEVINE (LGL) is a rare pre-excitation syndrome associated with an accessory pathway (James bundle) but normal ventricular activation, and supraventricular tachycardias.

PR interval < 0.12s
Absence of delta wave
QRS < 0.12s with normal morphology
Clinical paroxysmal tachycardia

LONG QT (LQT) is a conduction disorder characterized by prolongation and dispersion of ventricular repolarization, making Torsades de Pointes more likely.

$QTc = \frac{QT}{\sqrt{RR}}$ (Bazett formula)
 $QTc \geq 0.45s$

Both syndromes bear a risk of **perioperative arrhythmias**, with the former potentially increasing the risk of the latter. Besides antiarrhythmic and common anesthetic drugs might prolong QT.

CASE REPORT

PRE-OP. EVALUATION

Procedure	Partial parotidectomy for Warthin tumor
Medical history	Recurrent palpitations attributed to anxiety No familial history of sudden death No medication
Physical examination	Normal
ECG and labs	ECG: SR, 93bpm, PR 0.1s , QRS 0.1s with normal morphology, QTc 0.46s Metabolic workup unremarkable

Female, 48yo

FOLLOW-UP

- Cardiology referral
- Development of protocols to manage rare but life-threatening arrhythmias

IMMEDIATE POST-OP. PERIOD

- Post-op. analgesia supplemented with paracetamol 1000mg 8/8h
- Recover from surgery without complications

INTRA-OP. PERIOD

Pre-medication: midazolam 1mg
Induction & maintenance: TCI of propofol and remifentanyl, BIS monitoring
PONV prophylaxis: dexamethasone 4mg
Pain management: cervical superficial plexus block, 10ml ropivacaine 0,75%
No arrhythmias intra-operatively

DISCUSSION

Despite the scarcity of LGL cases and conflicting data on LQT, some general principles must be followed:

- ✓ **beta-blockers** maintained
- ✓ **magnesium sulphate** and **external defibrillator** available
- ✓ 5-lead ECG, consider A-line
- ✓ adequate anxiolysis, anesthetic depth and analgesia
- ✓ normo -carbia, -temperature, -volemia and electrolytes
- ✓ **avoid drugs prolonging QT**, although rarely proarrhythmic (droperidol, ondansetron, inhalational agents, etc.)
- ✓ **avoid sympathetic stimulation**
- ✓ **avoid amiodarone** when treating tachycardia

LEARNING POINTS

Appropriate selection of anesthetic drugs and avoidance of arrhythmogenic triggers ensure an uneventful perioperative course.

TIVA is safe in patients with LGL and LQT.

Nerve blocks avoid opioid rescue along with antiemetic drugs known to prolong QT.

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