

Prenatal Diagnosis of Long QT Syndrome in the Fetus: A New Perspective

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Introduction

Long QT Syndrome (LQTS) is a rare hereditary channelopathy in the fetal period. It must be highly suspected in cases of bradycardia or 2nd-degree AV block without structural heart disease.

Case Report Timeline

28 Weeks

- Fetal arrhythmia detected. Dysplastic tricuspid valve with significant regurgitation; frequent atrial extrasystoles.

31 Weeks

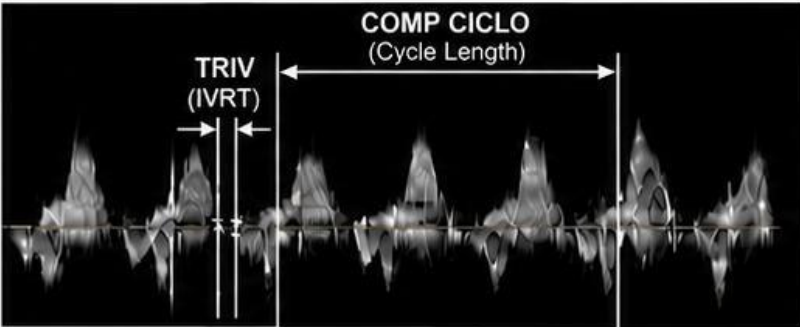
- Persistent 2:1 AV block.
- Atrial rate: 139 bpm / Ventricular rate: 69 bpm.

Clinical Status

- CV Profile Score 7/10 (cardiomegaly, shortening fraction 23%, reversed A-wave in ductus venosus).
- Maternal anti-Ro and anti-La antibodies: Negative.

Novel Prenatal Diagnostic Marker

Parameter	Normal Fetal Heart	Case Fetus
Rhythm	Normal Sinus Rhythm	2:1 AV Block
Heart Rate	120-160 bpm	Atrial 139 / Ventricular 69
IVRT/Cycle Ratio	< 11.3%	15%



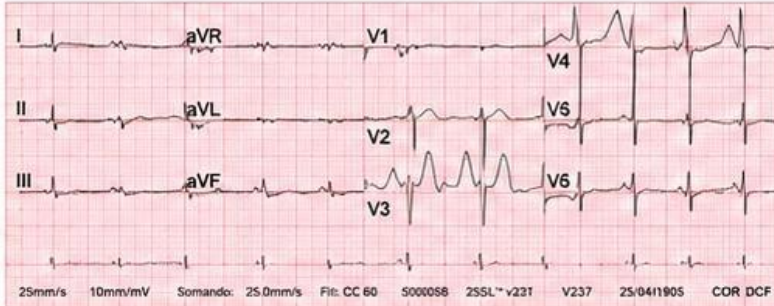
IVRT (72ms)

Cycle Length (476ms) = 15%

(Normal Reference: < 11.3%)

Postnatal Confirmation

33-week elective C-section. Male, 2910g, Apgar 9/10, syndactyly; bradycardia (113-120 bpm).



Postnatal QTc: 709 ms
Genetic Confirmation: Long QT 8
(Timothy Syndrome) via CACNA1C mutation.

Clinical Conclusion

Prenatal Doppler evaluation utilizing the IVRT/cardiac cycle ratio enables early and reliable **suspicious** of LQTS. In cases of unexplained fatal bradycardia or AV block, measuring this ratio represents a critical new diagnostic step, optimizing obstetric management, delivery planning, and family investigation.