Non-Drug Factors Associated With QT Prolongation and TdP

Autonomic Nervous System					
Clinical Factor	**Clinical Association with Increased QT**	**Quality of Evidence for Assoc. with Increased QT**	**Clinical Association with TdP**	**Quality of Evidence for Assoc. with TdP**	**Pubmed Search Link**
Pheochromocytoma	Yes	High	Yes	High	link
Alpha adrenergic stimulation	Yes	Moderate	Yes	Low	link
Emotion (Arousal)	Yes	Moderate	Yes	Moderate	link
Head-up tilt	Yes	High	None	No evidence	link
Pure Autonomic Failure	Yes	High	None	No evidence	link
Cold Water Immersion	Yes	Moderate	Yes	Moderate	link
Parkinson's disease	Yes	Moderate	None	No evidence	link
Esophageal ulcer	Weak	Low	None	No evidence	link
Migraine headache	Yes	Moderate	None	No evidence	link
Encephalitis (West Nile virus)	Weak	Moderate	None	No evidence	link
Endotracheal intubation	Yes	Moderate	None	No evidence	link
Sleep Deprivation	Yes	High	None	No evidence	link

Cardiovascular Diseases

Clinical Factor	Clinical Association with Increased QT	Quality of Evidence for Assoc. with Increased QT	Clinical Association with TdP	Quality of Evidence for Assoc. with TdP	Pubmed Search Link
Bradycardia, AV Block, Pause	Yes	High	Yes	High	link
Takosubo (stress-related) Cardiomypathy	Yes	High	Yes	High	link
Acute Myocardial Ischemia	Yes	Moderate	Yes	Low	link
Stroke	Yes	High	Yes	Low	link
Hypertension/LVH	Yes	Low	Weak	Very Low	link
Mitral Valve Prolapse	Yes	Moderate	Weak	Very Low	link
Cardiomyopathy/CHF	Yes	Moderate	Weak	Low	link
Atrial Fibrillation Conversion	Weak	Moderate	Yes	Moderate	link
Mitral valve stenosis	Yes	Moderate	None	No evidence	link
Hypertrophic Cardiomyopathy	Weak	Low	Weak	Low	link
Metabolic Syndrome	Yes	Moderate	None	No evidence	link
Aortic Stenosis	Yes	High	Yes	Moderate	link

Electrolyte Disorders					
Clinical Factor	**Clinical Association with Increased QT**	**Quality of Evidence for Assoc. with Increased QT**	**Clinical Association with TdP**	**Quality of Evidence for Assoc. with TdP**	**Pubmed Search Link**
Hypokalemia (3.5 mEq/L)	Yes	High	Yes	High	link

Hypomagnesemia (1.7 mg/dL)	Yes	High	Yes	High	link
Hypocalcemia (8.5 mg/dL)	Yes	High	Yes	High	link
Diarrhea	Yes	Moderate	Weak	Very Low	link
Licorice (Excessive ingestion)	Yes	High	Yes	Moderate	link
Bartter Syndrome	Yes	Moderate	Weak	Very Low	link
Hemodialysis	Yes	Moderate	Weak	Moderate	link
Hypernatremia (extreme)	Yes	Low	Yes	Very Low	link
Apheresis/blood transfusion	Yes	High	Yes	Moderate	link
Gitelman Syndrome	Yes	High	None	No evidence	link
Hypoalbuminemia	Weak	Very Low	None	No evidence	link

Endocrine Disorders					
Clinical Factor	**Clinical Association with Increased QT**	**Quality of Evidence for Assoc. with Increased QT**	**Clinical Association with TdP**	**Quality of Evidence for Assoc. with TdP**	**Pubmed Search Link**
Hypothyroidism	Yes	High	Yes	High	link
Hyperglycemia	Yes	Low	Weak	Very Low	link
Diabetes	Yes	Very Low	Weak	Very Low	link
Obesity (BMI >30, adiponectin)	Yes	Moderate	None	No evidence	link
Leptin	Yes	Low	None	No evidence	link

Decreased PI3 kinase (inc. INaL)	Yes	Low	None	No evidence	link
Primary Aldosteronism	Yes	Moderate	Yes	Moderate	link
Hypoglycemia	Yes	Low	Yes	Moderate	link
Hyperthyroidism	Yes	Low	Weak	Very Low	link
Panhypopituitarism	Yes	Moderate	Yes	High	link
Hyperparathyroidism	Yes	High	Weak	Very Low	link
Hypogonadism	Yes	Moderate	Yes	Moderate	link
Hypoparathyroidism	Yes	Moderate	Yes	Low	link

Environmental Effects					
Clinical Factor	**Clinical Association with Increased QT**	**Quality of Evidence for Assoc. with Increased QT**	**Clinical Association with TdP**	**Quality of Evidence for Assoc. with TdP**	**Pubmed Search Link**
Hypothermia	Yes	High	Yes	Moderate	link
Smoking	Weak	Low	None	No evidence	link
Alcohol (excess)	Yes	Low	None	Very Low	link
Herbals/Dietary Supplements	Yes	Moderate	Yes	Moderate	link
Hypoxia, COPD, Sleep apnea	Yes	Moderate	None	Low	link
Lead exposure	Yes	Low	None	No evidence	link
Carbon Monoxide	Yes	High	Weak	Low	link
Chlorobutanol	Yes	Low	Yes	Low	link

Omega 3 PUFA deficiency	Weak	Very Low	None	No evidence	link
Grapefruit juice	Yes	High	Yes	Low	link
Synthetic Cannabinoids	Yes	High	None	No evidence	link

General Clinical					
Clinical Factor	**Clinical Association with Increased QT**	**Quality of Evidence for Assoc. with Increased QT**	**Clinical Association with TdP**	**Quality of Evidence for Assoc. with TdP**	**Pubmed Search Link**
Female Sex	Yes	High	Yes	High	link
Age 65 yr	Yes	High	Yes	Low	link
Renal failure (GFR 30 ml/min)	Yes	Low	Yes	Very Low	link
Liver failure (cirrhosis)	Yes	Moderate	None	No evidence	link
Pulmonary embolism	Yes	Moderate	None	No evidence	link
Thiamine deficiency	Yes	Low	None	No evidence	link
Vitamin D deficiency	Yes	Low	Yes	Moderate	link

Inflammation/Auto-immune					
Clinical Factor	**Clinical Association with Increased QT**	**Quality of Evidence for Assoc. with Increased QT**	**Clinical Association with TdP**	**Quality of Evidence for Assoc. with TdP**	**Pubmed Search Link**
Sepsis	Yes	Low	Yes	Moderate	link

Systemic Lupus Erythematosus	Yes	Moderate	None	No evidence	link
HIV	Yes	Moderate	None	No evidence	link
C-Reactive protein	Yes	Moderate	Yes	Moderate	link
Heat Shock Proteins	Yes	Low	None	No evidence	link
Cytokines (TNF, IL1, IL6)	Yes	Moderate	Yes	Moderate	link
Fever	Yes	Low	Yes	Low	link
Inflammation/Rheum. Arthritis	Yes	High	Yes	Moderate	link
Sarcoidosis	Yes	Low	Weak	Very Low	link
Anti-Ro/SSA Antibody	Yes	Low	Yes	Very Low	link
Multiple sclerosis	Yes	Low	None	No evidence	link
Celiac disase	Yes	High	None	No evidence	link
Psoriasis	Weak	Very Low	None	No evidence	link
Cardiac Allograft Rejection	Yes	Low	None	No evidence	link
Ankylosing Spondylitis	Yes	High		No evidence	link
Scleroderma	Yes	Moderate	None	No evidence	link

Miscellaneous					
Clinical Factor	**Clinical Association with Increased QT**	**Quality of Evidence for Assoc. with Increased QT**	**Clinical Association with TdP**	**Quality of Evidence for Assoc. with TdP**	**Pubmed Search Link**
Pre-eclampsia	Weak	Low	None	No evidence	link

Genotypic Assoc.	Yes	High	Yes	High	link
Ferritin/Iron overload	Yes	Moderate	Weak	Moderate	link
Propionic acidemia	Yes	High	Yes	Low	link
Epilepsy/Seizures	Yes	Moderate	None	No evidence	link
Uric Acid	Weak	Low	None	No evidence	link
Electrical Shock	Yes	Moderate	None	No evidence	link
Liquid Protein Diet	Yes	High	Yes	Moderate	link
Sickle Cell Disease	Yes	High	Weak	Very Low	link
Congenital Gen. Lipodystrophy (PTRF)	Yes	Moderate	Weak	Very Low	link
Low density lipoprotein receptor-related protein 5 (LRP5)	None	Very Low	None	No evidence	link
Fatty Acid Binding Protein 4	Weak	Moderate	None	No evidence	link