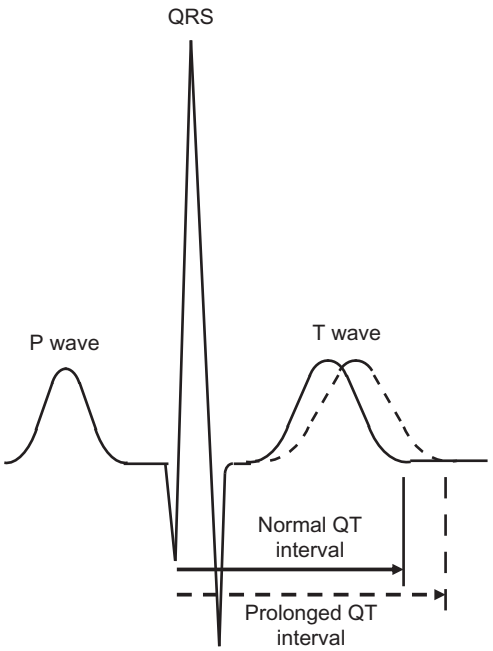

FIGURE 25.2 Drug-induced QT interval prolongation. Redrawn from Introduction to Antiarrhythmic Agents, by Dr Munther K. Homoud, M.D., Tufts-New England Medical Center, Spring 2008. *Permission to reproduce image granted by Dr Munther K. Homoud, M.D., Co-Director, New England Cardiac Arrhythmia Center, Tufts University School of Medicine, Medford, MA (e-mail of Jul. 22, 2015).*

are I_{Kr}, I_{Ks}, and the sodium channel. I_{Kr} refers to inward potassium rectifier channel, and I_{Ks} refers to slowly activating delayed rectified potassium channel (121).

Figure 25.2 reproduces a typical textbook example of the QT interval and QT interval prolongation (122). The *X*-axis has the unit of milliseconds and the *Y*-axis has the unit of millivolts. The letter "P" refers to the P wave. P wave represents atrial depolarization. The term "QRS" refers to QRS complex. QRS complex involves ventricular depolarization. QRS complex is produced by the upstroke of the action potential. The letter "T" is T wave. Finlayson et al. (123) provide a rudimentary introduction to the ECG readout, "the P wave represents the combined electrical activity of action potential depolarisation in the atria … [t]he QRS complex of the ECG corresponds to the action potential depolarisation as it occurs in the ventricles … while the T wave is associated with ventricular repolarisation." Finlayson et al. continue, "[t]hus the QT interval of an ECG represents the duration of the ventricular action potential, plus the time associated with transmission across the myocardium … [i]t therefore follows that a prolongation of the QT interval corresponds to a prolongation of the ventricular action potential."

c. Torsade De Pointes and Further Details on the QT Interval

The term, "torsade de pointes" was devised in 1966 to describe a peculiar appearance of ventricular tachycardia occurring in an elderly woman (124,125). Most drugs that cause TdP

[121]Nachimuthu S, et al. Drug-induced QT interval prolongation: mechanisms and clinical management. Therapeutic Adv. Drug Safety 2012;3:241–53.

[122]Redrawn from, Introduction to Antiarrhythmic Agents, by Dr Munther K. Homoud, M.D., Tufts-New England Medical Center, Spring 2008. Permission to reproduce image granted by Dr Munther K. Homoud, M.D., Co-Director, New England Cardiac Arrhythmia Center, Tufts University School of Medicine, Medford, MA (e-mail of July 22, 2015).

[123]Finlayson K, et al. Acquired QT interval prolongation and HERG: implications for drug discovery and development. Eur. P. Pharmacol. 2004;500:129–42.

[124]Roden DM. Drug-induced prolongation of the QT interval. New Engl. J. Med. 2004;350:1013–22.

[125]Dessertenne F. La tachycardie ventriculaire à deux foyers opposés variables. Arch. Mal. Coeur 1966;59:263–72.