The earliest electrocardiogram (ECG) change associated with hypokalemia is a decrease in the T-wave amplitude. As potassium levels decline further, ST-segment depression and T-wave inversions are seen, while the PR interval can be prolonged along with an increase in the amplitude of the P wave. The U wave is described as a positive deflection after the T wave, often best seen in the mid-precordial leads (e.g., V2 and V3). When the U wave exceeds the T-wave amplitude, the serum potassium level is < 3 mEq/L. In severe hypokalemia, T- and U-wave fusion with giant U waves masking the smaller preceding T waves becomes apparent on the ECG. A pseudo-prolonged QT interval may be seen, which is actually the QU interval with an absent T wave. Severe hypokalemia can also cause a variety of tachyarrhythmias, including ventricular tachycardia/fibrillation and rarely atrioventricular block. Treatment of hypokalemia involves parenteral and oral potassium supplementation, as well as identification and treatment of the underlying cause.

References