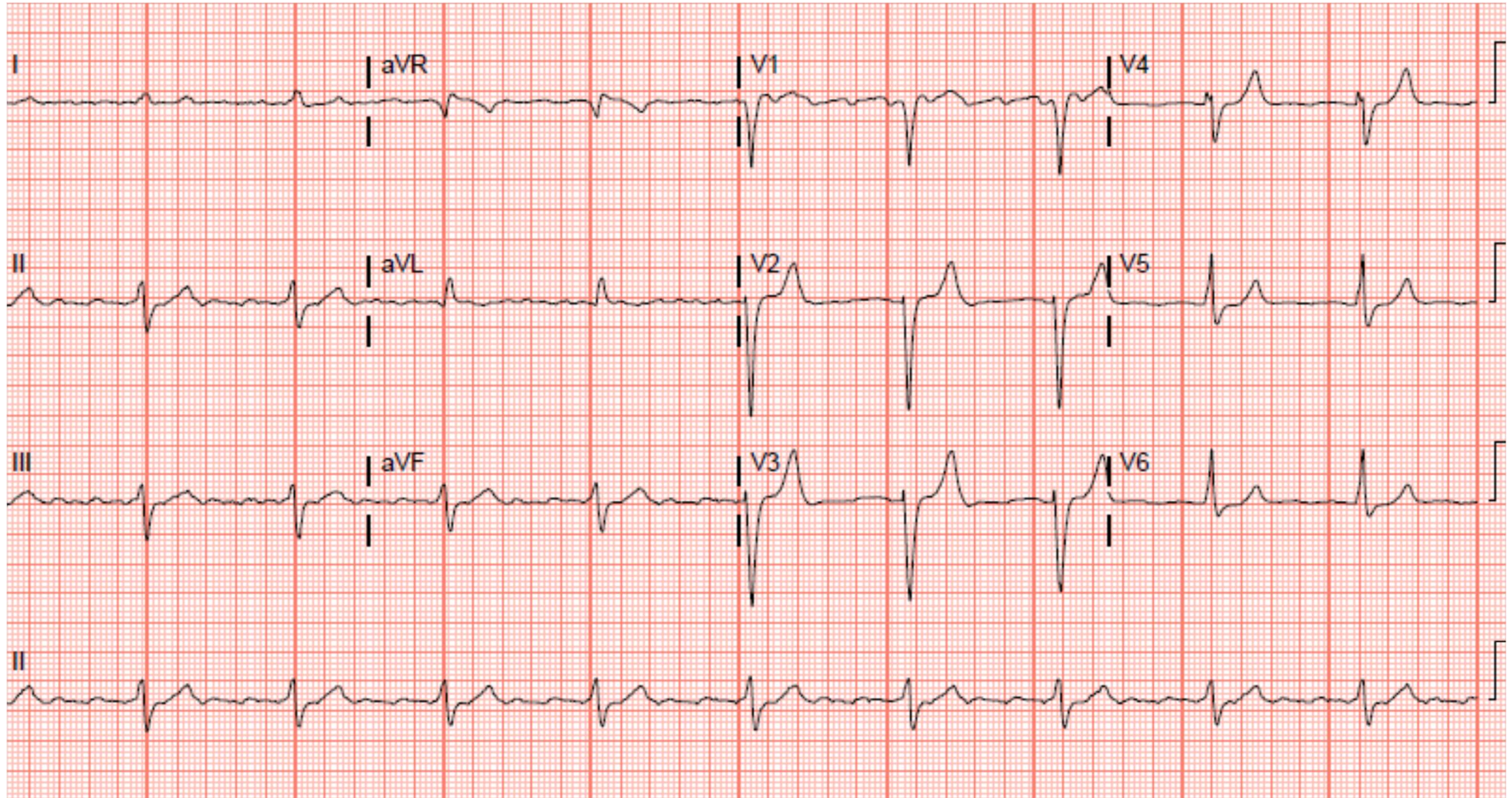


- Left bundle branch block, complete (LBBB)



- Prolonged QRS duration (≥ 0.12 seconds)
- Delayed onset of intrinsicoid deflection in leads I, V5, V6 (beginning of QRS to peak of R wave > 0.05 seconds)

- Broad, monophasic R waves in leads I, V5, V6 that are usually notched or slurred
- Secondary ST-T changes opposite in direction to the major QRS deflection
 - ST depression and T wave inversion in leads I, V5, V6
 - ST elevation and upright T wave in leads V1 and V2
- rS or QS complex in right precordial leads (V1 and V2)

Left axis deviation may be present.

LBBB may be permanent, transient, or intermittent.

LBBB interferes with determination of QRS axis and identification of ventricular hypertrophy and acute Q wave MI. Although the formal diagnosis of LVH should not be made in the setting LBBB, echocardiographic and pathological studies show that 80% of patients with LBBB have abnormally increased LV mass.

Q wave MI cannot be diagnosed in the presence of LBBB. However, the following criteria can be used to diagnose acute myocardial injury:

- ≥ 1 mm ST elevation in leads where major QRS vector is positive (concordant with the QRS)
- ≥ 1 mm ST depression in V1–V3 (must be present in two or more contiguous leads)
- ≥ 5 mm ST elevation in two or more contiguous leads where major QRS vector is negative (discordant with the QRS)

LBBB may result in a pseudo-infarct pattern: QS pattern and ST segment elevation in leads V1–V4 mimic anteroseptal MI. Less commonly, Q waves in leads III and aVF mimic inferior MI.

The left bundle branch originates in the Bundle of His, travels down the interventricular septum, and then branches into left anterior and left posterior fascicles, which in turn transmit electrical impulses via terminal Purkinje fibers to the papillary muscle of the mitral valve and the left ventricle. As a result: (1) tension within the papillary muscles/valve leaflets begins to

increase before ventricular contraction; (2) ventricular contraction begins in the apex and travels toward the base; and (3) ventricular contraction occurs in the endocardium before the epicardium. As with the right bundle branch, this electrical activation sequence optimizes cardiac output and overall efficiency of the heart by squeezing, shortening and twisting of the ventricular myocardium during systole; thus in effect “wringing out” the ventricles with each beat.

LBBB can be seen in:

- LVH
- MI
- Organic heart disease
- Congenital heart disease
- Degenerative conduction system disease
- Very rarely in normal

