Sgarbossa Criteria

Background

- In patients with left bundle branch block (LBBB) or ventricular paced rhythm, infarct diagnosis based on the ECG is difficult.
- The baseline ST segments and T waves tend to be shifted in a discordant direction (“appropriate discordance”), which can mask or mimic acute myocardial infarction.
- However, serial ECGs may show dynamic ST segment changes during ischemia.
- A new LBBB is \textit{always} pathological and can be a sign of myocardial infarction.
**Electrocardiographic Criteria**

The three criteria used to diagnose infarction in patients with LBBB are:

- **Concordant ST elevation > 1mm** in leads with a positive QRS complex (score 5)
- **Concordant ST depression > 1 mm** in V1-V3 (score 3)
- **Excessively discordant ST elevation > 5 mm** in leads with a negative QRS complex (score 2). This criterion is sensitive, but not specific for ischemia in LBBB. It is however associated with a worse prognosis, when present in LBBB during ischemia.

A total score of $\geq 3$ has a specificity of 90% for diagnosing myocardial infarction.

During right ventricular pacing the ECG also shows left bundle branch block and the above rules also apply for the diagnosis of myocardial infarction during pacing, however they are less specific.

In the GUSTO-1 trial the ECG criterion with a high specificity and statistical significance for the diagnosis of an acute MI was:

- **Excessively discordant ST segment elevation $\geq 5$ mm** (in leads with a negative QRS complex).

Two other criteria with acceptable specificity were:

- **Concordant ST elevation $\geq 1$ mm** in leads with positive QRS
- **Concordant ST depression $\geq 1$ mm** in leads V1, V2, or V3
Positive Sgarbossa criteria in a patient with LBBB and troponin-positive myocardial infarction:

- This patient presented with chest pain and had elevated cardiac enzymes.
- Baseline ECG showed typical LBBB.
- There is 1mm *concordant ST elevation* in aVL (= 5 points).
- Other features on this ECG that are abnormal in the context of LBBB (but not considered “positive” Sgarbossa criteria) are the pathological Q wave in lead I and the concordant ST depression in the inferior leads III and aVF.
- This constellation of abnormalities suggests to me that the patient was having a high lateral infarction.
Amal Mattu presents a case of acute myocardial infarction in the presence of left bundle branch block.

http://www.youtube.com/watch?v=jGQajcVgYPM&feature=player_embedded

References