**Identification of STEMI in the presence of Left Bundle Branch Block**

Prehospital interpretation of electrocardiograms is crucial to ensure early diagnosis and optimal treatment of patients with ST Elevation Myocardial Infarction. According to research recognition of STEMIs by qualified personnel in the prehospital phase has successfully reduced the delay from the first medical contact to reperfusion. Unfortunately in patients with with left bundle branch block or ventricular paced rhythm, infarct indentification based on the ECG can be difficult. Sgarbossa criteria is a set of criteria that can help providers identify acute myocardial infarction in patients with left bundle branch block or ventricular paced rhythm. To use Sgarbossa criteria, providers should first identify if the patient has a left bundle branch block.

HOW TO RECOGNIZE LEFT BUNDLE BRANCH BLOCK

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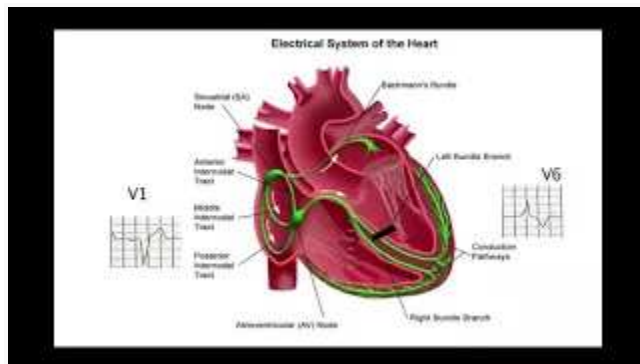
Rule of Appropriate Discordance

The identification of STEMI in LBBB is dependent on the "Rule of Appropriate Discordance," which means that, in normal LBBB (without MI), the ST segment (and usually T-wave) are in the opposite direction (discordant to) the majority of the QRS.
Unlike appropriate discordance inappropriate concordance is where the QRS complex and the T wave are both predominantly positive or negative in the same direction, which is atypical for a bundle branch block. This is where Sgarbossas criteria comes in.
The Sgarbossa criteria were created by Dr. Elena Sgarbossa, an Italian cardiologist. Dr. Sgarbossa developed these criteria in 1996 as a way to identify acute myocardial infarction in patients with pre-existing bundle branch block based on their ECG findings. The criteria have since been widely used in clinical practice to help differentiate between true myocardial infarction and other conditions that can mimic it in patients with bundle branch blocks.

The Sgarbossa criteria are as follows:

- ST elevation ≥1 mm in a lead with upward QRS complex (concordant) - 5 points
- ST depression ≥1 mm in lead V1, V2, or V3 - 3 points
- ST elevation ≥5 mm in a lead with downward QRS complex (discordant) - 2 points

A total score of ≥ 3 is reported to have a specificity of 90% for diagnosing myocardial infarction.

Note:

The third criteria has been revised using Smiths Modification. The Smith-Modified Sgarbossa criteria recognized the limitations of the third Sgarbossa criteria related to excessive discordance, given that it had limited utility diagnostically within the total score.
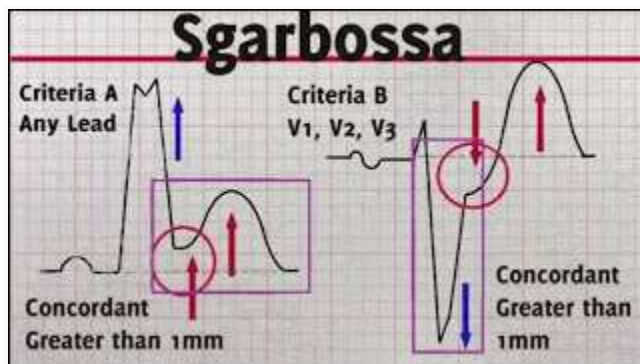
The use of a 5 mm cutoff for excessive discordance was arbitrary and non-specific — for example, patients with LBBB and large voltages will commonly have ST deviations > 5 mm in the absence of ischaemia. The modified rule is positive for "STEMI" if there is discordant ST elevation with amplitude > 25% of the depth of the preceding S-wave.

Smiths study "Diagnosis of ST-elevation myocardial infarction in the presence of left bundle branch block with the ST-elevation to S-wave ratio in a modified Sgarbossa rule" can be found at:

https://www.sciencedirect.com/science/article/abs/pii/S0196064412013686

For the purpose of this training we will be focusing on the first two criteria. The following video is an easy to understand explanation of those criteria.

SGARBOSSA CRITERIA

https://youtu.be/K7oCGEy5qqA