ATRIAL INFARCTION - 2009

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Infarction of the cardiac atria occurs more frequently than is commonly considered. Ischemic damage to the atrial myocardium is usually associated with infarction of cardiac ventricles, but isolated infarction of an atrium can occur and may be of clinical significance (1).

Atrial infarction is rarely diagnosed before death because of its characteristically subtle and nonspecific electrocardiographic findings.

Atrial infarction is a neglected ECG sign with important clinical implications.

These findings may be overshadowed by changes associated with concomitant ventricular infarction (2).

ECG diagnosis criteria

PR (PRs), PQ segment (PQs), STa segment or PTa segment: it stretches from the end of P wave to the onset of QRS complex. Displacement of this segment (depression or elevation), which represents part of the atrial ST (STa)
segment only ostensive when associate with AV block as a consequence of atrial infarction Usually, PRs (end of P wave up to QRS complex onset), ST (from J point or the end of QRS up to the beginning of the T wave) and TPs (from the end of the T wave up to the onset P wave of the following cycle) segments are at the same level. Ja point: Point of junction between the end of the P wave and the onset of PRs. Normal location of atrial repolarization (Ta or TP wave). It coincides with ventricular depolarization (QRS complex),

what explains its absence for being concealed by the ventricular phenomenon.

The 3 segments PRs, ST and TPs normally are at the same level Ta wave may cause falsely positive strain tests in the presence of important PR segment depression in maximal strain, longer time of exercise and maximal strain faster than those truly positive, absence of effort-induced pain and P wave of voltage higher in maximal strain.

In acute right ventricular MI high degree AV block is present in almost half of the cases.

STa segment elevation may produce a diagnostic monophasic pattern during the early stage of ventricular ischemia.

1) Depression of the STa segment alone is not a reliable sigh unless the degree of depression is marked.

2) P shape with M or W morphology during the acute MI episode.

3) Frequently atrial arrhythmias (35% of cases): Higher incidence of supraventricular arrhythmias in acute atrial fibrillation compared with ventricular infarction, atrial flutter, supraventricular tachycardia, changing pacemaker, junctional rhythm, sinus bradycardia, and AV conduction
disturbances. Ischemia of the sinus node due to coronary occlusion proximal to the origin of the sinus node artery is a likely cause of arrhythmias4

4) Atrial arrhythmias (present in 35% of cases): ischemia of the sinus node due to coronary occlusion proximal to the origin of the sinus node artery is a likely cause of arrhythmias (5).

5) Pump failure of the right and left ventricle

6) Atrial wall rupture

7) Thromboembolization (4)

LIU CRITERIA FOR ATRIA INFARCTION (6)

I) MAJOR CRITERIA

1) PRs elevation >0.5mm in leads V5 and V6 with reciprocal depression of PRs in V1 and V2 leads.

2) PRs elevation >0.5mm in leads I with reciprocal depressions in II and III.

3) PRs depression >1.5mm in precordial leads an 1.2mm in I, II, associated with any atrial arrhtymia.

II) MINOR CRITERIA

1) Abnormal P waves, flattening of P-wave in M, flattening of P-wave in W, irregular or notched P wave.

References

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