CLINICAL CAUSES FOR LAFB PREVALENCE - 2009

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Frequency of different dromotropic disorders of the intraventricular His system per 1000 ECGs (1).

1. LAFB: 14 per 1000 (7 per 1000 isolated and 7 per 1000 associated to CRBBB);
2. LSFB?
3. CRBBB: 12 per 1000;
4. CLBBB: 8 per 1000 (1% of the normal population);
5. LPFB: 2 per 1000. About the latter, Lopes et al (1) found it in 7.43 per 1000 of 7000 consecutive cases studied. We think that many of the cases of Lopes VM et al were right inferior fascicular blocks and not LPFB.

More frequent > 50 years (75%) and 90% > than 40 years. Between the normal populations, a prevalence of 0.9 to 1.4% has been estimated (2).

Corne et al (2) found 2.4% of LAFB in a study of 16,400 patients candidates to life insurance, in whom in 86% heart disease was not proven.

Actually, they are the causes for extreme deviation of SAQRS in the left superior quadrant with counterclockwise rotation of QRS loop in the frontal plane that do not correspond to true non LAFB, since there is no dromotropic
alteration, but just structural and/or positional alterations of the left intraventricular conduction system.

An important cause of extreme left axis deviation is right end conduction delay (RECD), located in the right superior quadrant of the FP, corresponding to the territory of the superior or subpulmonary fascicle of the right branch, in the site of the RV outflow tract between -100 and 160 degree. The location of the

delay justifies the recording of prominent R waves with a certain delay in the lead that faces the RV outflow tract: aVR.
This is the most frequent variant of RECD (70% of all of our cases). The superior infundibular subpulmonary region of the RV is the last one to activate, generating a final basal vector (basal vector 3d), heading upward and to the right between -1000 and -1600 in the FP.
The ECG characterization is
1) SAQRS with extreme deviation in the left superior quadrant between -30º and -90º
2) QRS loop of counterclockwise rotation in the frontal plane
3) Rapid passage from left to right of the QRS loop
4) Discrete RECD of 30 ms (15 dashes) located in the right superior quadrant between – 100º and – 160º; or greater.
5) 5) QRS complexes predominantly negative in inferior leads: prominent S wave in these leads
6) SII>SIII: useful for the differential diagnosis with LAFB;
7) R wave of aVR prominent and/or broad. aVR of the qR or QR type, with R being frequently broad.
The confusion in literature is great between RECD and LAFB.

The causes for LAFB may be grouped into:
A) CONGENITAL CAUSES
1) Endocardial cushion defects: LAFB + RBBB + BVE
2) Tricuspid atresia: RAE or BAE + LVE + LAFB + Cyanosis
3) Hypertrophic cardiomyopathy: 30% of the cases;
4) Persistence of arterial canal (PAC) of rubella syndrome
5) Univentricular heart with infundibulum to the right
6) Anomalous origin of the left coronary artery of the pulmonary artery truncus or Bland-White-Garland syndrome;
7) Transposition of the great arteries congenitally corrected;
8) Double outlet RV with subaortic VSD without PS;
9) VSD: 15% - mainly to basal posterior;
10) Post-operative of tetralogy of Fallot correction with septal approach pathway (in this case, associated to CRBBB: Bifascicular Block).

B) ACQUIRED CAUSES

1) Coronary insufficiency (40%);
2) Systemic hypertension (30%);
3) Association of 1 and 2 (+ of 70% of the cases);
4) Cardiomyopathy: it stands out in our zone due to chronic chagasic heart disease. Nearly always associated to CRBBB (more frequent < 40 years old)
5) Aortic valve disease
   a) severe aortic insufficiency (30%);
   b) aortic stenosis (AOS);
6) Severe mitral valve insufficiency;
7) Lev disease (up to 30% in some series);
8) Lenègre disease (Genetics. It affects the SCN5A gene);
9) Myocarditis;
10) With no underlying disease.

In athletes the ECG, and alterations were divided into two groups:
- group I - 'benign', common - thought to be consistent with the athlete's heart syndrome (i.e.: sinus bradycardia, 1st degree atrioventricular block, early repolarzation, right bundle branch LAFB, isolated signs of left ventricular
hypertrophy); and
- group II - 'suspected', uncommon - which may occur due to
organic heart disease (i.e. complete RBBB or LBBB, ventricular arrhythmia, inverse T wave or pathological QRS axis deviation, and LPFB.

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References

1) Lopes VM, et al. J. Electrocardiol 1974; 7:197-214.
2) Corne RA, et al. Br. Heart. J 1978; 40: 552-557.