Interesting Electrocardiograms

The Etiology of Left Bundle Branch Block

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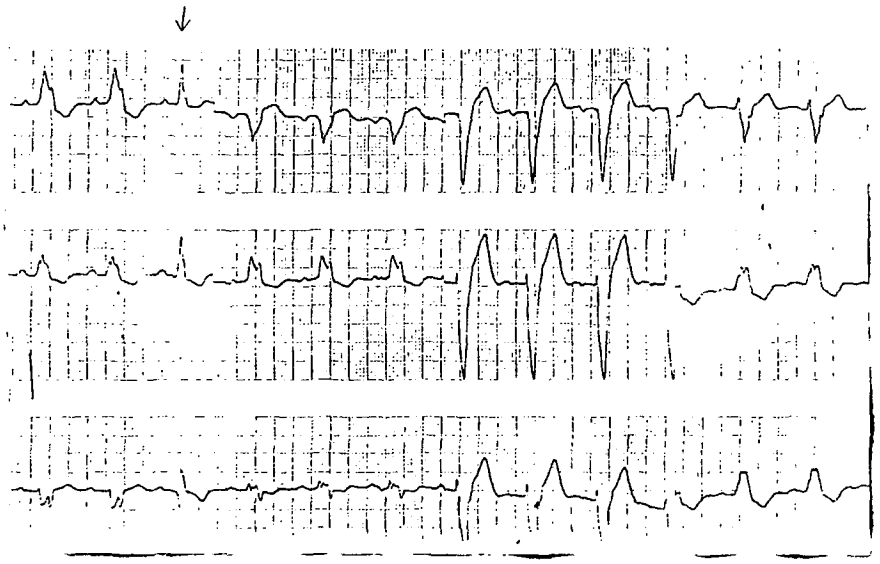
This electrocardiogram was taken on a 65-year old man and shows sinus rhythm with a prolonged PR interval (0.22 sec.) and, in all but one beat, a left bundle branch block (LBBB) (QRS interval = 0.16 sec. with RR' in I, aVL, and V6). The sinus beat marked with an arrow shows a normal QRS interval - i.e., no LBBB. Examination of this beat, recorded simultaneously on all three standard leads, reveals clear evidence for an old inferior myocardial infarction, - wide and deep Q in III and negative T waves in both II and III.



The etiology of LBBB has considerable bearing upon insurance ratings. The anatomic lesions which can produce LBBB include valvular heart disease - especially aortic valve stenosis and/or insufficiency - left ventricular hypertrophyy from any cause, fibrotic degenerative disease (as described by Lenegre and Lev) and, of course, coronary artery disease. In the past, coronary disease was thought to be the major cause of LBBB but it is now clear that it may play the inciting role in only a third of the cases of LBBB and that degenerative sclerotic or fibrotic lesions are the commonest causes of this intraventricular conduction defect.

When coronary disease can be established - as in this patient - the overall prognosis, and hence the insurance risk, tends to be poorer than in the non-coronary cases with LBBB.

The risk of onset of complete AV block and possible sudden death is due to the fact that LBBB is probably more often produced by bifascicular block, a combination of left anterior (LAFB) plus left posterior fascicular block (LPFB), than by a lesion higher up in the conduction system which destroys the main left bundle branch before it subdivides. Bifascicular block implies more widespread conduction system disease and more likelihood of CHB. Often one can see (in serial tracings) first the onset of left anterior fascicular block and, later on, the presence of complete LBBB when the second left fascicle ceases to function as well. Unless first degree or second degree AV block is also present, as a marker of more widespread disease, the possibility of the development of complete heart block in a person with complete LBBB is still statistically not as great as, for example, when bifascicular block involves the right bundle branch, i.e., CRBBB plus either left anterior or left posterior fascicular block. This is true because block at the level of the main left bundle does not frequently go on to CHB.

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