Bilateral Bundle Branch Block

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The tracings presented here were obtained from a 60-year-old man with presumptive coronary heart disease, who was receiving no digitalis prior to the appearance of the arrhythmia. The latter was considered as an example of apparent second degree a-v block (changing from 2.1 to 3.2 caused by intermittent bilateral bundle branch block. The upper strip shows sinus rhythm with a rate of 68. At first glance, it seems that the type of a-v conduction is the one characteristic of the ordinary form of Wenckebach disturbance of a-v propagation. It can be seen that the first P-R interval measures 0.16 second; the second, 0.24 second; the third is blocked. Thereafter, the 3:2 block changes into 2:1, although the sixth and seventh P-R intervals re-initiate the previous (3:2) a-v transmission. On the other hand, it is clear that there is also a change in the contour of the QRS complexes. The first shows a right bundle branch block morphology, with normal (left-to-right) septal depolarization and ventricular activation time of 0.12 second. The second shows a left bundle branch block morphology, with abnormal (right-to-left) septal depolarization and a QRS interval of 0.12 second. The assumption that both beats are conducted from the atria immediately raises the question of intermittent block of both bundle branches. Therefore, it was postulated (in retrospect) that the first supraventricular stimulus encountered no impedance to transmission in the left branch, whereas it was completely stopped in the contralateral branch, as can be seen in the diagram. On the contrary, the second stimulus coming from the atria was completely stopped in the left branch, while only delayed in the right branch, this delay being manifested simply by a prolongation (from 0.16 to 0.24 second) of the P-R interval. It was logical therefore to estimate that the following (third) J wave was not conducted to the ventricles because of the incidence of simultaneous, complete, bilateral, bundle branch block. Varying degrees of intermittent bilateral bundle branch block can be seen in the rest of the

Figure 1: ++, +, 0, represent facility of conduction through the right (R) and left (L) bundle branches of consecutive sinus impulses, with ++ representing the most rapid and 0 absent conduction.
upper, as well as in the lower, strips. The prolongation through the branches is analyzed in the corresponding schematics.

These recordings are important because they illustrate that an area of a-v block, even with the classic Wenckebach structure, is not necessarily always located in the a-v node or His bundle. They are the clinical counterpart of the experiments performed many years ago by Scherf in the dog's heart. It was postulated in this particular case the depressed area was located in the bundle branches themselves. The different degrees of abnormal conductivity affected the branches unequally, although sometimes it was severe enough so as to produce complete impedance in propagation from the atria to ventricles. Therefore, it can be concluded that the electrocardiographic image of complete a-v block can be produced by complete bilateral bundle branch block.

COMMENT

An atrial impulse transmitted to the ventricles encounters a normal delay in the a-v node; the latter has its own blood supply. Many physiologic and pathologic disorders can augment (and sometimes diminish) the normal a-v delay, but the impulse can also be delayed in either bundle branch and less commonly as a result of bilateral bundle branch block. In the presence of a normal P-R interval, an altered QRS morphology different from the dominant QRS complex suggests intermittent bundle branch block. In this paper, there is evidence of intermittent block in the right and left bundles which is not due to digitalis and may be assumed to be due to myocardial ischemia in a 60-year-old man with coronary disease.

Intermittent bilateral bundle branch block can resemble a-v block; such a resemblance can have important implications in therapy.

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METHYLDOPA IN HYPERTENSION

The antihypertensive activity of methyldopa therapy has been demonstrated in a group of mild to moderate hypertensives, but side effects of febrile reactions and occipital headaches were significantly prominent. Cessation of therapy and/or prednisone administration resulted in prompt disappearance of symptoms. There is no apparent hazard in the use of corticosteroids as the unit, and total daily dosages were small. Febrile reactions and occipital headaches associated with methyldopa ingestion have been reported elsewhere. This observer feels that a causal relationship to methyldopa therapy exists, even though "concrete" evidence (the patients were not rechallenged), is not available. Until the pharmacodynamics of the febrile reactions and occipital headaches associated with methyldopa therapy are better understood, we prefer other medications for the treatment of hypertension.


GLYCERYL TRINITRATE IN ANGINA PECTORIS

The findings of the present study unequivocally demonstrate the potential of glyceryl trinitrate for increasing the capacity for work of the anginal patient. This was clearly shown in 14 of the 15 patients carefully studied by a rigid double-blind technique. These results are statistically highly significant. The marked degree of correlation between increase in exercise tolerance and improvement in electrocardiographic response to measured exercise again establishes the validity of the ECG method for identifying effective agents for the treatment of angina pectoris. To date, there is no other technique for use with human or animal subjects that has proved to be of comparable value for defining the range of clinical usefulness and the possible mode of action of antianginal compounds.

Of the numerous agents in the nitrate series, worthwhile responses of considerably longer duration than recorded with glyceryl trinitrate have only been observed following the use of pentaerythritol tetranitrate and trimine tosylate. Comparable benefit has also been noted from certain formulations of theophylline when administered in adequate dosage.