THE ELECTROCARDIOGRAM OF THE MONTH

This "Electrocardiogram Of The Month" is the beginning of a series. The authors would be pleased to receive comment and controversy from readers in relation to explanations offered.

Electrocardiograms A and B were made, respectively, before and after exercise employing a bicycle exerciser. The 26 year old subject has no symptoms and no signs of heart disease. His blood pressure is 120/80. There are no evidences of arteriosclerosis in the peripheral vessels or the eyegrounds. He is not a diabetic. He is apparently in good health.

Explanation

The subject is a healthy intern at the Touro Infirmary who was used as a subject for a controlled study of the effect of exercise upon the electrocardiogram.
The inversion of the T waves in Lead II and III and in the precordial leads is commonly observed with rapid rate, after 20 rapid deep knee bends, or after a period of bicycle exercise sufficient to cause dyspnea. The inversion of the T waves in the middle and right precordial leads is more unusual as a purely exercise effect. However, it is commonly observed after hyperpnea and in this instance it is also due to the fact that the mean T effects are made to point upward (away from all of the chest electrodes) when the exercise causes a marked diminution in the magnitude of the ventricular gradient.

Less exertion produces similar effects if performed 30 minutes to an hour after a meal. Smoking has a marked effect in some persons. Many errors in diagnosis result from the prevalent deep-rooted prejudice against inverted T waves in lead II and in the left precordial leads. These are commonly interpreted as abnormal regardless of the circumstances under which they are observed. It seems clear to us that in many instances the proper evaluation of low or inverted T waves can only be made by studying tracings made 1) under basal conditions, 2) after exercise, 3) after a meal, 4) after exercise performed 45 minutes following a meal. The series of observations should be made on the same morning. In some cases the effects of other factors should be observed (e.g., smoking).

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