

PREFACE

A new approach for the interpretation of the electrocardiogram (ECG), *a step-by-step method for the accurate interpretation of the ECG*, is outlined in this text.

The most important addition in the second edition of *Rapid ECG Interpretation* was a new chapter, Basic Concepts. This chapter gives considerable practical details with 16 instructive illustrations so that the reader can fully understand the genesis of each wave and deflection of the ECG and the reason 12 carefully positioned leads are needed to capture 12 views of the heart's electrical currents and vector forces. Also, more than 35 new ECG tracings were added to the chapters that discuss topics that will be of value to postgraduates and internists.

The major addition in this third edition is a new chapter: ECG Board Self-Assessment Quiz. The chapter provides 90 selected ECG tracings that should sharpen the skills of all who wish to interpret ECGs. This small-volume text contains more than 320 ECGs and instructive illustrations.

The ECG is the oldest cardiologic test, but even 100 years after its inception, it continues as the most commonly used cardiologic test. Despite the advent of expensive and sophisticated alternatives, the ECG remains the most reliable tool for the confirmation of acute myocardial infarction (MI). The ECG—not CK-MB, troponins, echocardiogram, or SPECT or PET scan—dictates the timely administration of life-saving PCI or thrombolytic therapy. There is no test to rival the ECG in the diagnosis of arrhythmias, which is a common and bothersome clinical cardiologic problem. Also, the clinical diagnosis of pericarditis and myocardial ischemia is made mainly by ECG findings.

This text gives a systematic step-by-step approach but departs somewhat from the conventional sequence and gives steps that are consistent with the changes in cardiology practice that have evolved over the past decade. The early diagnosis of acute MI depends on astute observation for ST segment changes. New terms have emerged: ST elevation MI and non-ST elevation MI (non-Q wave MI). The ST segment holds the key to the diagnosis. Currently, ambulance crews are being trained in Europe, the United States, and Canada to recognize ST segment abnormalities and to make the diagnosis of ST elevation MI (STEMI)

and non-ST elevation MI. Thus, patients can be rapidly shuttled to special cardiac centers for coronary angiography and angioplasty/stent or thrombolytic therapy; rapid triage in emergency rooms is crucial. These lifesaving measures depend on the accurate and rapid interpretation of the ECG by clinicians who must be adequately trained to interpret tracings.

This text describes ST segment abnormalities in detail. For example, the recent observation that ST segment elevation in lead aVR (a commonly ignored lead) is a marker for left main coronary artery (LMCA) occlusion is of lifesaving value. Because LMCA occlusion is a serious condition, any noninvasive diagnostic clue represents a valuable addition to our armamentarium. Thus, only after detailed assessment of the ST segment is completed are the QRS complex, T waves, atrial and ventricular hypertrophy, and lastly the axis assessed. This change in the analytical sequence is necessary so that the most crucial diagnoses can be made accurately and rapidly.

In addition, the standard teaching is for the interpreter to assess all leads and all deflections and waves before entertaining diagnoses. This text gives presumptive diagnoses as soon as a clue is uncovered in the tracing. Also, a few rare but life-threatening conditions are excluded early in the assessment sequence. For example, although Wolff-Parkinson-White (WPW) syndrome is uncommon, it is an important diagnosis that may be missed by computer analysis and by physicians. Because WPW syndrome is a result of widening of the QRS complex, it is logical to consider this diagnosis in the same framework as bundle branch blocks; this approach avoids the danger and embarrassment of missing the diagnosis. No text considers WPW syndrome in the assessment of the 10 essential ECG features. Most important, it is imperative to exclude mimics of MI early in the sequence. WPW syndrome may mimic MI. Right bundle branch block (RBBB) may reveal Q waves in leads III and aVF that may be erroneously interpreted as MI. Left bundle branch block (LBBB) may mimic MI and must be quickly documented because its presence hinders the accurate diagnosis of acute coronary syndromes. Furthermore, the ECG manifestation of acute MI may be a new LBBB pattern. Thus, the assessment for blocks is performed early, in step 2 of the 11 steps outlined.

Because RBBB and LBBB are best revealed in leads V_1 and V_2 , the clinician is advised to screen these leads before assessing other leads. The text advises the clinician or senior resident that the assessment of V_1 and V_2 may assist with the diagnosis of Brugada syndrome and right ventricular dysplasia, which may display particular forms of right

bundle branch block and recently have been shown to be causes of sudden death in young adults. Many rare syndromes are described in medicine, but those that cause sudden death should be made familiar to trainees and clinicians. We should not fear divulging information about such rare syndromes at an early stage to students and residents, because these topics may serve to motivate them to higher levels of excellence.

This text presents a unique 11-step method for accurate and rapid ECG interpretation in a user-friendly synopsis format. Medical house staff should welcome this step-by-step method, because it simplifies ECG interpretation and provides for greater accuracy than the approaches given in texts published over the past 50 years. The succinct writing style allows a wealth of information to be presented in a small text that is highlighted with bullets to allow for rapid retrieval. The 11 steps are illustrated in algorithms and outlined in Chapter 2 with references to later chapters, each of which expands on one of the steps and provides advanced material for senior internal medicine residents, cardiology residents, and internists. The text moves rapidly from basics to advanced material.

All diagnostic ECG criteria are given with relevant and instructive ECGs, providing a quick review or refresher for proficiency tests and for physicians preparing for the ECG section of the Cardiovascular Diseases Board Examination. This text can be a valuable tool for all those who wish to be proficient in the interpretation of ECGs.

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