

A Clinical Manual of Cardiovascular Medicine

Edward K. Chung

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Edward K. Chung, M.D., F.A.C.P., F.A.C.C.

Professor of Medicine
Jefferson Medical College of
Thomas Jefferson University and
Director of the Heart Station and
Attending Physician (Cardiologist)
Thomas Jefferson University Hospital
Philadelphia, PA



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Preface

The primary intention of *A Clinical Manual of Cardiovascular Medicine* is to describe common cardiovascular disorders which are frequently encountered in our daily practice. Thus, the purpose of this publication is, by no means, to discuss in-depth various subjects in medicine nor to describe in detail all cardiovascular diseases.

The contents are intended to be clinical, concise, and practical, so that this manual will provide all readers with up-to-date materials which will assist them directly in the daily care of their patients with common cardiovascular problems. It can be said that we never have sufficient time to read in-depth the standard textbooks and various journals when presented with a clinical emergency with cardiovascular problems. In addition, it may not be absolutely necessary for medical students, house staff and noncardiac physicians to read many oversized textbooks in cardiology.

The format of this manual is organized into an outline structure in order to provide all necessary information in the diagnosis as well as management of common cardiovascular disorders without spending much time. Thus, the manual will be particularly valuable to medical house staff, primary care physicians (e.g., family physicians, emergency room physicians, internists, and so forth), and cardiology fellows. In addition, medical students (junior and senior) and cardiac care nurses will obtain a great benefit by reading this manual for better understanding of various cardiovascular problems.

I would like to express my appreciation to my personal secretary, Michele Harvey, for her valuable secretarial assistance. It has been my pleasure to work with the staff of Appleton-Century-Crofts.

Edward K. Chung, M.D.
Bryn Mawr, PA

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1

History Taking and Physical Diagnosis

The quality of medical care afforded patients with cardiovascular disease is primarily dependent on the quality of the diagnostic foundation provided by a careful and in-depth history and physical. A complete history and physical examination should be performed, with particular reference to the cardiovascular system.

Many physicians are familiar with the "five-finger approach" to cardiac diagnosis popularized by W. Proctor Harvey. This consists of:

1. History.
2. Physical examination.
3. Electrocardiogram.
4. Chest X-ray.
5. Various other laboratory tests.

Although some cardiac disorders can be diagnosed with a single modality, a full understanding of the patient's problem usually requires the utilization of multiple types of information. The history and physical examination may overlap in certain areas, but important diagnostic information is often obtained while taking the history alone. When any abnormal physical finding is demonstrated, of course, additional history pertinent to the finding should be taken in order to confirm the clinical diagnosis. Special diagnostic procedures, such as cardiac catheterization, echocardiography, nuclear scanning

(myocardial imaging), exercise (stress) electrocardiography, and ambulatory (Holter monitor) electrocardiography, are often necessary for accurate diagnosis and proper treatment.

I. THE MEDICAL HISTORY TAKING IN CARDIOVASCULAR DISEASES

A. Goals of History Taking

1. Establish rapport with the patient.
2. Obtain diagnostic information about the patient.
 - a. Collect pertinent information that may lead to the establishment of the diagnosis.
 - b. Assess the severity of the problem.
 - c. Determine other sources of information, such as the names of other physicians who have treated the patient in the past, and previous medical records.
 - d. Assess the patient's personality traits.
 - e. Assess the patient's level of understanding.
 - f. Assess the patient's personal goals and requirements with regard to activity status.

B. Characterization of Symptoms

Patients may have heart disease without symptoms, or they may have symptoms that are associated with noncardiac diseases. Various symptoms due to heart disease may arise in other systems of the body, causing erroneous diagnoses of noncardiac disease.

The characteristic features of all symptoms should be obtained in detail to provide the maximum information. For example, questioning about chest pain should include:

1. Location (including origin and radiation).
2. Quality.
3. Quantity (including severity, frequency, and duration).
4. Chronology (including onset and development).

5. Setting and recurrence (including time of day, activity, and emotional state).
6. Aggravating and alleviating factors.
7. Associated symptoms.
8. Response to any particular medication.

The symptoms most frequently experienced by patients with cardiovascular disease include:

1. Chest pain.
2. Dyspnea.
3. Palpitations.
4. Syncope, near-syncope, or dizziness.
5. Fatigue.
6. Hemoptysis.
7. Cyanosis.
8. Edema (particularly ankle edema).

C. Specific Symptoms

1. Chest Pain
 - a. Angina pectoris (Chapter 2)
 - i. Angina pectoris is characterized by paroxysmal attacks of chest discomfort that occur when coronary blood flow is inadequate to meet the metabolic demands of the heart.
 - ii. The pain occurs retrosternally and frequently radiates into the neck, jaw, and upper extremities. It often radiates across the precordium to the left shoulder and upper arm.
 - iii. Angina is usually described as being dull and constant. It has been described as constricting, pressing, or expanding. It is also often expressed as a burning sensation, "indigestion," or "heartburn."
 - iv. The pain may be mild to excruciating and occurs with variable frequency.
 - v. Attacks of angina pectoris usually last only a few minutes. Sublingual nitroglycerin (NTG) usually relieves the pain within 3 min.

- vi. The attacks usually occur during physical exertion, emotional stress, exposure to cold weather, or following meals. The pain may occur at rest (angina decubitus) or awaken the patient from sleep (nocturnal angina).
 - vii. The pain is usually precipitated by physical exertion and relieved with rest or sublingual NTG.
 - viii. Anginal pain may be accompanied by palpitations, dizziness, and nausea.
 - ix. Angina occurring with greater frequency and/or with increasing severity has been referred to as "unstable angina" or "crescendo angina," and often occurs even at rest.
 - x. Coronary artery spasm may occur with or without fixed coronary artery lesions. Chest pain associated with coronary artery spasm typically occurs at rest rather than with mild exertion or emotional excitement. It frequently occurs during the night, awakening the patient from sleep. Coronary artery spasm may cause acute myocardial infarction (MI) and even death in severe cases.
 - xi. When an angina attack is not relieved by rest and two or more sublingual NTG tablets, impending acute MI should be suspected, and the patient should be treated in the coronary care unit (CCU) until proven otherwise.
- b. Myocardial infarction (Chapter 3)
- The pain of MI differs from that of angina pectoris in several ways.
- i. It is usually more severe.
 - ii. The pain can persist for hours, and occasionally as a mild discomfort, pressure sensation, or soreness for one to three days or even longer.
 - iii. It usually occurs at rest.
 - iv. The pain is usually not relieved by NTG.
 - v. Chest pain is frequently associated with various other serious manifestations of cardiogenic shock, acute con-

gestive heart failure (CHF), and life-threatening cardiac arrhythmias.

c. Pericarditis (Chapter 7)

- i. The pain is sharp and frequently severe.
- ii. It is located precordially and may radiate into the shoulders and neck.
- iii. It is exacerbated by deep inspiration or turning from side to side. Leaning forward may lessen the chest discomfort.
- iv. The nature of the chest pain and other associated findings may vary considerably, depending upon the underlying disorders.

d. Myocarditis and cardiomyopathies (Chapters 7 and 8)

- i. Myocarditis and cardiomyopathies may cause chest pain depending upon the underlying disorders.
- ii. Myocarditis is often associated with pericarditis, and the chest pain under this circumstance is usually similar, if not identical, to pain in a pure pericarditis.
- iii. Chest pain and even ECG findings of cardiomyopathies may closely resemble acute MI.

e. Pulmonary embolism (Chapter 11)

- i. Most small pulmonary emboli produce little or no chest pain.
- ii. The pain of pulmonary embolism (PE) is usually sharp, of sudden onset, and is aggravated by breathing.
- iii. It is usually accompanied by significant dyspnea.
- iv. A history of recent surgery, pregnancy, trauma, bed rest, prolonged sitting or standing position, or use of oral contraceptives (often associated with smoking) may be of help in making the diagnosis.

f. Dissection of the aorta (Chapter 12)

- i. The pain is sharp, sudden, excruciating, and worse at the onset. It is often described as "tearing" or "ripping."
- ii. Its location is in the anterior chest, but it frequently radiates into the back or the abdomen.

- iii. It is *not* aggravated by breathing.
- iv. Symptoms of vascular occlusion frequently follow.
- g. Mitral valve prolapse syndrome (Barlow's syndrome) (Chapter 6)
 - i. Chest pain associated with mitral valve prolapse syndrome (MVPS) is usually sharp, brief, unrelated to exertion, and located near the apex or left lateral chest.
 - ii. It may be associated with palpitations, dyspnea, fatigue, and dizzy spells.
 - iii. It may mimic the pain of angina pectoris or MI but usually produces atypical chest pain.
- h. Psychoneurotic problems
 - i. Various psychoneurotic disorders frequently produce atypical chest pain, but anxiety is probably its most common cause.
 - ii. The pain is usually located in the inframammary region, and rarely radiates.
 - iii. It usually does not occur during exertion, but may follow it.
 - iv. It is frequently associated with other signs of emotional problems.
 - v. Hyperventilation syndrome is one of the typical examples of the psychoneurotic disorders causing chest pain.
- i. Chest wall pain
 - i. Chest pain may occur from disorders in the ribs, muscles, costal cartilages, xiphoid, nerves, breast, pleural lining, or thoracic spine.
 - ii. Clinical conditions causing chest wall pain:
 - (1) Tietze's syndrome (Costochondritis).
 - (2) Xiphoidalgia.
 - (3) Myofascial pain.
 - (4) Fracture of ribs.
 - (5) Slipping rib syndrome.
 - (6) Cardiac causalgia.

- (7) Herpes zoster.
- (8) Thrombophlebitis of the chest wall.
- iii. Other conditions causing chest pain:
 - (1) Pulmonary hypertension.
 - (2) Pneumonia.
 - (3) Shoulder-hand syndrome.
 - (4) Pneumothorax.
 - (5) Esophageal dysfunction or rupture.
 - (6) Hiatal hernia.
 - (7) Gastric and duodenal disorders.
 - (8) Gallbladder disease.
- 2. Pain in the Extremities (Chapter 13)
 - a. Intermittent claudication of the legs is due to arterial insufficiency.
 - b. It may be described as a cramp, a "pins-and-needles" sensation, or a feeling that the leg is "going to sleep."
 - c. Ischemic pain must be differentiated from that of thrombophlebitis:
 - i. Superficial thrombophlebitis is characterized by pain, erythema, warmth, and a tender, indurated cord along the vein. There should be no generalized edema or systemic reaction.
 - (1) Unexplained superficial thrombophlebitis in a young man may be due to thromboangiitis obliterans.
 - (2) Superficial thrombophlebitis in an older person, especially when recurrent, suggests the possibility of an occult malignancy.
 - (3) Superficial thrombophlebitis may be confused with erythema nodosum, erythema induratum, periarteritis nodosa, nodular vasculitis, and non-suppurative panniculitis.
 - ii. Deep thrombophlebitis causes pain, swelling, and tenderness in the calf.
 - (1) The symptoms are usually unilateral, and may go unrecognized if mild.

- (2) Fever may occur, but usually does not exceed 101°F.
- (3) The differential diagnosis of deep thrombophlebitis includes cellulitis, lymphangitis, and lymphedema.
- (4) Unexplained recurrent thrombophlebitis should suggest the possibility of an occult malignancy, a blood dyscrasia, or systemic lupus erythematosus (SLE).

3. Dyspnea (Chapter 14)

- a. Dyspnea is the subjective distress associated with difficulty in breathing.
- b. Mild dyspnea may be purely subjective, but more severe dyspnea may be accompanied by objective evidence of increased respiratory effort.
- c. Exertional dyspnea is usually due to CHF or chronic pulmonary disease.
- d. Orthopnea is a type of dyspnea that occurs when the patient assumes a recumbent position. It usually occurs with left ventricular failure, but also may occur with severe pulmonary disease. The patient usually uses two or more pillows to sleep.
- e. Paroxysmal nocturnal dyspnea (PND) typically occurs 1–2 hr after the patient has fallen asleep. It is relatively specific for CHF.
- f. Trepopnea is the sensation of dyspnea, palpitations, or an uncomfortable feeling that frequently occurs when patients with cardiac disease lie on their side, especially their left side.
- g. Acute pulmonary edema causes the sudden onset of dyspnea and cough, frequently with frothy, blood-tinged sputum, and is often a severe form of left ventricular failure.
- h. The dyspnea of PE is frequently associated with chest pain and hemoptysis (Chapter 11).
- i. The dyspnea of chronic obstructive pulmonary disease (COPD) is usually accompanied by a productive cough and a history of cigarette smoking or bronchitis.
- j. Dyspnea is frequently triggered by anxiety and hyperventilation.

4. Palpitations (Chapter 16)

- a. Palpitation is an uncomfortable and strange feeling in the chest, and a variety of cardiac arrhythmias is the underlying cause in most cases.
- b. Patients may note that their heart is "beating fast," "beating irregularly," "pounding," or "skipping beats."
- c. If the palpitations represent premature beats (extrasystoles) or tachyarrhythmias, the patient will often be able to describe their frequency, rate, duration, precipitating factors, and regularity versus irregularity.
- d. Events other than arrhythmias may cause similar sensations, including vigorous ventricular contractions associated with hyperkinetic heart syndrome. Heart murmurs or arterial bruits audible to the patient are sometimes interpreted as palpitations.

5. Syncope

Syncope is a transient loss of consciousness due to inadequate cerebral blood flow. Near-syncope refers to lightheadedness, weakness, and loss of postural tone, without loss of consciousness. Generally, syncope should be characterized according to its relationship to:

- a. *Activity*: The syncope of aortic stenosis, for example, is often exertional.
- b. *Palpitations*: Syncope preceded by palpitations may suggest an arrhythmia as the origin.
- c. *Position*: Syncope occurring when the patient stands suddenly may represent orthostatic hypotension that may be due to carotid artery stenosis (due to atherosclerosis), diabetes mellitus, or antihypertensive medications. Syncope related to motion of the neck may be related to carotid artery stenosis or carotid sinus syncope (Chapter 19).

6. Fatigue

- a. Fatigue related to cardiovascular disease is usually due to low cardiac output.

- b. If fatigue is present without dyspnea, pulmonary congestion is probably absent (e.g., in chronic mitral insufficiency).
- c. Fatigue may occur if volume depletion or potassium depletion occurs following treatment for CHF.
- d. Patients receiving antihypertensive drugs may experience weakness due to postural hypotension.
- e. Patients with MVPS frequently complain of fatigue, and it may occur long before the diagnosis is established.
- f. The most common cause of fatigue is probably anxiety. Cardiac fatigue more commonly occurs with effort, while the fatigue of anxiety occurs at rest.

7. Hemoptysis

Cardiovascular causes of hemoptysis include:

- a. Mitral stenosis (Chapter 5).
- b. Pulmonary infarction (Chapter 11).
- c. Eisenmenger's syndrome (Chapter 6).
- d. Rupture of a pulmonary arteriovenous fistula.
- e. Rupture of an aortic aneurysm (usually luetic) into the trachea (Chapter 12).
- f. Pulmonary hemosiderosis.

8. Cyanosis

- a. Cyanosis may be present at birth due to a congenital cardiac anomaly with right-to-left shunt (Chapter 6).
- b. It may be acquired later in life in the presence of congenital heart disease with increases in right-to-left shunt or reversal of a left-to-right shunt (Chapter 6).
- c. It may occur in severe left ventricular failure, but the possibility of pulmonary embolism should always be considered.

9. Fluid Retention

- a. The physician should always ask about swelling of the ankles, weight gain, and increasing abdominal girth.
- b. As many as 10–15 lb of extracellular fluid may be accumulated before visible edema occurs.
- c. Edema may not be due to CHF but rather to hypoproteinemia,