

Classic clinical descriptions of disease: Curing medical education with a dose of the past

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ABSTRACT

The importance of clinical skills, including obtaining patient history and performing physical examination, has been de-emphasized in the modern medical school curriculum. With advancements in diagnostic technologies, the clinical presentation of diseases in medical textbooks has been simplified, diminished, and largely replaced with detailed pathophysiology and laboratory findings. The implementation of the United States Medical Licensing Exam (USMLE) Step 1 has also contributed in pushing medical education toward classroom-based learning rather than emphasizing clinical experience. Clinical skills competency is crucial to accurately diagnose patients and simultaneously lowers health care costs by not relying on unneeded diagnostic tests. To address this gap in medical knowledge, a group of students at Texas Tech University Health Sciences Center, Lubbock, Texas, have created a website documenting classic clinical disease descriptions written by some of the renowned physicians from the 19th and 20th centuries, including Osler, Flint, Gowers, etc. This website will continue to grow and will be a useful tool for professors, physicians, and medical students.

Keywords: medical education, disease description, medical textbooks

INTRODUCTION

Over the past few decades, physicians and medical educators have expressed increasing concern that the clinical skills of history taking and physical examination have been de-emphasized in the modern, current medical school curriculum.^{1–3} New diagnostic technologies have contributed to a 50–75% increase in health care costs every year.⁴ The practice of medicine in the United States and other countries has evolved as a result of new technological innovations. The use of endoscopy, sophisticated imaging, and physiologic testing, while valuable tools in the appropriate setting, may seem more important than obtaining an accurate

medical history.⁵ While the modern medical era provides physicians with many diagnostic technologies, these new techniques are only appropriately used in making a differential diagnosis after information from a medical history is maximized.

Recent technological advances in medicine, although exciting and innovative, are endangering students' interest in learning classic clinical skills. Students are increasingly encouraged to rely on new technologies for diagnoses, threatening the perceived value of symptom recognition and diagnosis. Furthermore, after the United States Medical Licensing Exam (USMLE) Step 1 was implemented in the 1990s, the preclinical curriculum shifted from learning patient-focused clinical skills to memorizing "high-yield", testable information.⁶ This disinterest in learning valuable clinical skills may impair medical students' ability to accurately diagnose diseases. A study conducted by Peterson *et al.* showed that most diagnoses are made from a thorough patient

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history rather than from laboratory tests, again highlighting the importance of learning proper clinical skills during medical education.⁷ Increased attention on diagnostic testing, biochemical pathways, and physiological pathology is reflected in modern medical textbooks and Step 1 preparation books, while clinical pictures and presentation of diseases have been reduced, essentially crowded out of the modern textbook.

As a group of Texas Tech University Health Science Center (TTUHSC), Lubbock, Texas, medical students, we are creating an online resource, documenting classic clinical disease descriptions written by the great clinicians of the 19th and early 20th centuries. Our initial group of five students spent the summer obtaining classical medical textbooks not readily available in the public domain. Using scanning technology, we converted classical disease descriptions from original textbooks into a Word compatible format. These texts were then organized by disease groups and shared on the TTUHSC website for public access. We hope that medical students and clinicians will find this resource helpful in expanding their knowledge of disease presentation and will gain an understanding of diseases that surpasses what is written in modern textbooks.

COMPARISONS

While the background of pathology, physiology, and diagnostic testing emphasized in contemporary medical texts is critically important, learning to understand how patients feel and describe their disease is still a critical supplement to modern medical education. For example, in the 20th edition of *Harrison's Principles of Internal Medicine Vol. 2*, published in 2018, almost 2000 words are devoted exclusively to the underlying pathology of acute gout, emphasizing the composition and characteristics of its crystals. In the same text, merely 159 words are written on the clinical description of the disease. The paragraph reads as follows:

Acute arthritis is the most common early clinical manifestation of gout. Usually, only one joint is affected initially, but polyarticular acute gout can occur in subsequent episodes. The metatarso-phalangeal joint of the first toe often is involved, but tarsal joints, ankles, and knees also are affected

commonly. Especially in elderly patients or in advanced disease, finger joints may be involved. Inflamed Heberden's or Bouchard's nodes may be a first manifestation of gouty arthritis. The first episode of acute gouty arthritis frequently begins at night with dramatic joint pain and swelling. Joints rapidly become warm, red, and tender, with a clinical appearance that often mimics that of cellulitis. Early attacks tend to subside spontaneously within 3–10 days, and most patients have intervals of varying length with no residual symptoms until the next episode. Several events may precipitate acute gouty arthritis: dietary excess, trauma, surgery, excessive ethanol ingestion, hypouricemic therapy, and serious medical illnesses such as myocardial infarction and stroke.⁸

This modern chronicle pales in comparison with classical disease descriptions. In his description of acute gout, William Osler, who is widely recognized as the “Father of Modern Medicine”, clearly details the experience of the patient and focuses on localization and pattern as diagnostic techniques:

In some instances, the throat is sore, and there may be dyspnoea. The attack sets in usually in the early morning hours. The patient is aroused by a severe pain in the metatarso-phalangeal articulation of the big toe, and more commonly on the right than on the left side. The pain is agonizing, and, as Sydenham says, insinuates itself with the most exquisite cruelty among the numerous small bones of the tarsus and metatarsus, in the ligaments of which it is lurking.' The joint swells rapidly, and becomes hot, tense, and shiny. The sensitiveness is extreme, and the pain makes the patient feel as if the joint were being pressed in a vice. There is fever, and the temperature may rise to 102° to 103° F. Toward morning the severity of the symptoms subside, and, although the joint remains swollen, that day may be passed in comparative comfort. The symptoms recur the next night, and the “fit,” as it is called, usually lasts for from five to eight days, the severity of the symptoms gradually abating. There is usually a moderate leucocytosis during the acute manifestation. Other joints may be involved, particularly the

tarsal joint. The inflammation, however intense, never goes on to suppuration. With the subsidence of the swelling the skin desquamates. The tarsus alone may be involved [...] After the attack the general health may be much improved. As Aretaeus remarks, a person in the interval has won the race at the Olympian games. Recurrences are frequent. Some patients have three or four attacks in a year; others suffer at longer intervals.⁹

Despite Harrison's modern text devoting about 6000 words to the pathophysiology, etiology, diagnostic tests, and treatment, of emphysema, the clinical presentation is described with few details:

The three most common symptoms in COPD are cough, sputum production, and exertional dyspnea. Many patients have such symptoms for months or years before seeking medical attention. Although the development of airflow obstruction is a gradual process, many patients date the onset of their disease to an acute illness or exacerbation. A careful history, however, usually reveals the presence of symptoms prior to the acute exacerbation. The development of exertional dyspnea, often described as increased effort to breathe, heaviness, air hunger, or gasping, can be insidious. It is best elicited by a careful history focused on typical physical activities and how the patient's ability to perform them has changed. Activities involving significant arm work, particularly at or above shoulder level, are particularly difficult for many patients with COPD. Conversely, activities that allow the patient to brace the arms and use accessory muscles of respiration are better tolerated. Examples of such activities include pushing a shopping cart or walking on a treadmill. As COPD advances, the principal feature is worsening dyspnea on exertion with increasing intrusion on the ability to perform vocational or avocational activities. In the most advanced stages, patients are breathless doing simple activities of daily living.⁸

This description cannot compare to the elegant detail recorded by Flint. His picturesque description is much more likely to be remembered by medical students and will help correctly diagnose emphysema in clinical settings:

The diagnostic local symptoms of vesicular, lobar emphysema, relate to respiration and cough. A moderate degree and extent of the affection occasion want of breath on exercise, the breathing being without habitual embarrassment; the patient is unable to run, or walk rapidly, and especially to ascend stairs, without the respiration becoming labored. If the affection be considerable, the patient has labored breathing when at rest. The labor is especially manifest in expiration; this act is prolonged, the inspiratory act being shortened and quickened. A greater amount of the lesion involves much suffering from dyspnea; the cervical veins are enlarged; the prolabia and face are cyanotic; the patient is unable to lie down; there is oedema of the limbs, and there may be anasarca or general dropsy. The latter symptoms denote dilation of the right ventricle and auricle. Cough and expectoration are usually symptoms. [...] The cough is often spasmodic, consisting of a series of short expiratory efforts, resembling in this respect a paroxysm of whooping cough. During the cough the face becomes deeply congested, the veins of the neck are swollen, and lividity is sometimes marked, these symptoms denoting distension of the right auricle. The expectoration varies in quantity and in other characters as in different cases of chronic bronchitis without emphysema. [...] The physical diagnosis in cases of moderate emphysema is based on positive and negative evidence furnished by percussion and auscultation. The resonance on percussion over the upper lobes of both lungs is vesiculo-tympanic, as compared with the resonance over the lower lobes. In other words, the intensity is greater, the pitch is higher, the vesicular and tympanic quality being combined. [...] The respiratory murmur, especially over the upper lobes, is weakened. [...] The inspiratory sound is shortened, and in a certain proportion of cases, the expiratory sound is prolonged. The prolonged expiratory sound is low in pitch and blowing in quality.⁹

Classic descriptions allow students to have detailed visualizations of diseases so when they encounter such patients in their practice, they can confidently and accurately diagnose their condition. While modern texts list the different symptoms seen

in diseases like amyotrophic lateral sclerosis, an excerpt from the clinical presentation mentioned in Gowers' *A Manual of Diseases of the Nervous System* is memorable:

In the upper part of the arm the loss of power is usually first noticed [...] In the hand the wasting is often first noticed, but sometimes it is the impairment of some delicate action, such as writing [...] The affected muscles lose their proper shape, and there is flattening, or even depression, where there should be a prominence [...] From the part first affected, the disease spreads to other parts of the same limb. Before it has attained a considerable degree in one limb it usually shows itself in the corresponding limb on the other side [...] As the muscles waste, voluntary power is lessened, and paralysis results of various character and degree, corresponding to the atrophy [...] In most cases the wasting early involves the muscles of the back, and it often begins in them [...] The muscles that extend the head on the spine often suffer in considerable degree, and from this there results a difficulty in the carriage of the head [...] The muscles of respiration suffer in the majority of cases. And their impairment constitutes a grave source of danger to life [...] Wasting in the legs is much less common than in the arms [...] the legs are often paralyzed when they are not wasted [...] The face almost always escapes general wasting [...] All trace of muscle may disappear from parts of a limb or even from an entire limb, and there is usually wasting of the adipose tissue as well as the muscle, so that bone seems to only be covered by fascia and skin [...] The 'claw-like' hand develops in extreme degree [...] Moreover, spontaneous flickering contractions of parts of the muscles are very common [...] Lordosis is very common [...] By far the most frequent complication is bulbar paralysis, weakness of the lips, tongue, pharynx, and often of the laryngeal muscles [...].¹⁰

DISCUSSION

As medical research and innovation continue to evolve, physicians gain an increased understanding of etiologies, lab findings, and treatments of diseases.

However, thorough patient histories with a robust understanding of classical disease symptoms can best distinguish the right diagnosis from a wrong one. The venerable writings of classical physicians were invaluable to the medical community due to their relevance to clinical practice.¹¹ Classical physicians relied more on the physical presentations of their patients and stockpiled a rich knowledge of symptomatic disease findings. Now, when medical interns are asked, "Why did you miss the diagnosis?", a study by Georges Bordage showed the five most significant answers to be (a) "It never crossed my mind." (b) "I paid too much attention to one finding, especially lab results." (c) "I didn't listen enough to the patient's story." (d) "I was in too much of a hurry." (e) "I didn't know enough about the disease." Four of these five reasons for misdiagnosis were due to insufficient patient history or inadequate knowledge of disease symptoms.¹²

Not only do fundamental clinical skills decrease diagnostic errors, but they also spare the patient from unnecessary costs and potential discomfort or harm as a result of laboratory testing.¹³ For example, migraines have very characteristic symptomatology that can be diagnosed from a proper clinical history and physical exam. Wang *et al* has found that among patients with migraine and a normal neurological examination, the prevalence of significant intracranial abnormalities on neuroimaging ranges from 0 to 3.1%, and combining these data in a meta-analysis resulted in a prevalence of 0.18%.¹⁴

Lower back pain is another example in which detailed patient history is more helpful than diagnostic imaging. Studies have shown that advances in technology allow MRI to detect more abnormalities; however, these abnormalities are potentially irrelevant to the clinical picture.¹⁵ Furthermore, only about 0.7% of patients who experience lower back pain are diagnosed with metastatic cancer, 0.01% are diagnosed with spinal infection, and 0.04% have cauda equina syndrome.¹⁵ Diagnostic imaging can increase costs without adding value. For example, a study by Kim *et al* found that MRI and CT have moderate to poor accuracy when diagnosing sciatica, a common cause of back pain, with a high number of false negatives and positives, yet these diagnostic tests are still being used.¹⁶

There are many possible explanations for medical school curricula de-emphasizing clinical skills. These curriculum changes are affecting the education of medical students globally. Ten years ago, the clinical experience of third and fourth-year medical students consisted of taking patient histories, conducting physical examinations, collecting blood samples, and inserting intravenous lines. Now, upper-level medical students are mostly observers due to their decreased hands-on experience with patients.¹⁷ This can be greatly attributed to the increasing number of specialists in the medical field (i.e., nurses, physician's assistants, phlebotomists, etc.) who improve patient care and efficiency. Unfortunately, this simultaneously decreases the active role of third and fourth-year medical students in patient care. The importance of USMLE Step 1 scores to residency programs has also fostered a curriculum that encourages classroom-based learning over clinical skills. However, the recent decision for Step 1 to be scored as pass/fail will hopefully push medical school curricula toward proficiency in clinical-based learning.

We hope this online resource, which we have started as a summer project, will continue to grow through the help of other students. We plan to foster a scholarly community to encourage medical students to learn classic symptoms of diseases from some of the greatest physicians, including Osler, Sydenham, Gowers, Aretaeus, Flint, etc. The current collection of classical medical textbooks referenced on our website is included in the addendum below. Perhaps some of these descriptions will be incorporated into our faculty's lectures.

Website link. <https://www.ttuhschool.edu/medicine/disease-database/default.aspx>

ADDENDUM

Classic clinical descriptions of disease: curing medical education with a dose of the past

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