

Laennec Contributions to the Field of Medicine

INTRODUCTION

Rene Theophile Hyacinthe Laennec was a master of clinical diagnosis. Using his invention, the stethoscope, he perfected the art of physical examination of the chest, methods to examine, and also introduced many terms that are still used today. He wrote two books that were masterful descriptions of the diseases of chest and heart. He wrote the first descriptions of bronchiectasis and cirrhosis, and classified pulmonary conditions. He described murmurs and thrills, bronchial and vesicular breathing, pectoriloquy (as a sign of tubercular cavities), egophony, bronchophony, a variety of rales, and normal and abnormal breath sounds. Laennec's distinguished career and invention of the stethoscope contributed great advances to the study and diagnosis of chest diseases.

Rene Laennec was a French physician who invented the stethoscope. He is also known as the father of clinical auscultation. Rene Theophile Hyacinthe Laennec is considered to be one of the greatest doctors of all times. Born as the son of a lawyer, he was actually discouraged from practicing medicine, but as fate would have it, under his uncle's able guidance, the young Rene too developed an interest in medicine and began his medical studies. He soon enrolled as a medical student in Paris' finest hospital, the Charite, and studied under prominent physicians like Dupuytren and Jean-Nicolas Corvisart-Desmarets. A brilliant physician, he became a member of the Societed' Instruction Medicale.

The present-day ornamental garland of the doctor hung around his neck had its modest beginning at the start of the 19th century. The introduction of auscultation – a new method to diagnose diseases – was his greatest contribution to medical science. This method involves listening to and identifying various sounds made by different organs. Before the invention of this method, Laennec's diagnostic method involved placing his ear on the chest of the patient. This method made him quite uncomfortable while examining the young women and fatty patients, and hence, this led to innovation of a new device called stethoscope, which he initially termed as "chest examiner." Though criticized initially, his works were way ahead of his time and had a great impact on medical science.¹⁻³

Laennec was an illustrious, instructive, and popular speaker in all branches of medicine.

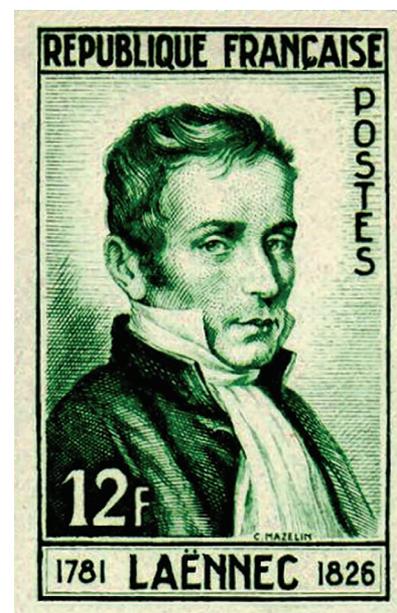
MAJOR RESEARCH/SCIENTIFIC STUDIES AND WORK

Father of Clinical Auscultation

Laennec introduced mediate auscultation using stethoscope for sounds of lungs and heart and revolutionized medicine. Laennec listened to the sounds of air entering and leaving the lungs, which were named breath sounds. He is considered as the father of clinical auscultation and wrote the first description of bronchiectasis and cirrhosis. He also classified the pulmonary conditions, such as pneumonia, bronchiectasis, pleurisy, emphysema, pneumothorax, phthisis, and other lung diseases. He learned to recognize these conditions from the sounds he heard with his stethoscope. His classification of pulmonary conditions is still used today.^{4,5}

Throughout Laennec's medical work and research, his diagnoses were supported with observations and findings from autopsies.¹ Rene Laennec started publishing important scientific papers on various topics in 1802. One of his major papers was on peritonitis (inflammation of the abdominal cavity's lining).²

During the Napoleonic wars in 1812–1813, he was in charge of the wards in the Salpêtrière Hospital in Paris reserved for wounded soldiers. A staunch Roman Catholic, his religious affiliation helped him to secure an appointment as personal physician to Joseph Caedinal Fesch, half-brother of Napoleon and French ambassador to the Vatican in Rome.^{1,2}



Invention of Stethoscope

Lung Sounds

In 1816, Rene Laennec was appointed as physician at the Necker Hospital in Paris. During that period, the doctors used to place their ear on the chest of the patient to listen to the chest sounds. When a young overweight woman came to him complaining of chest problems, he found the traditional method of listening to heartbeats ineffective. So, he rolled a paper into a cylinder and placed one side on the woman's chest and the other to his ear. He could now hear the sounds more clearly. He improvised the new device he had just designed and called it a stethoscope, from stethos (chest) and skopos (examination). The initial model, he developed consisted of a wooden tube and was monoaural. The other advancements include the developments of binaural stethoscope. The new device helped him in classifying the terms rales, rhonchi, crepitation, pectoriloqy, bronchophony, and egophony (sound resembling bleating of goat) pertaining to the sounds captured by the stethoscope. He published "De l'auscultation mediate" ("On Mediate Auscultation") in 1819. It was the first discourse on a variety of heart and lung sounds heard through the stethoscope.^{1,4-6}

In 1819, Laennec published his book on auscultation, i.e., listening to the sounds made by heart and lungs, by contracting muscles, by rush of blood in aneurysms, intestinal sounds, crepitus over a fractured site of bone, by fetus *in utero*, or to any sound produced in the skeleton or any internal part in the body in antenatal care and during delivery; fetal heart sounds are heard through fetoscope, a type of stethoscope.¹

Melanoma

While still a student, Laennec was the first to lecture on melanoma. He coined the term melanoma (Greek meaning mela, Milan or black), referring to the type of cancer that typically occurs in the skin but may rarely occur in the mouth, intestine, or eye. He was the first to recognize that melanotic lesions in the lungs were the result of metastatic melanoma. His report was published as a bulletin in 1806.^{7,8}

Tuberculosis

When Laennec was physician at the Necker Hospital in Paris, he focused on tuberculosis and chest diseases. He became deeply absorbed in the mysteries of chest, studying many chests and comparing his observations with post-mortem findings. During autopsies, he observed that the chests of tubercular patients were filled with fluid with pus and cavities. Tuberculosis was common in Laennec's time accounting for many deaths. He himself suffered from tuberculosis and many of his family members died from the disease, including his mother, brother, and uncle. His mentors, Bichat and Bayle, also succumbed to the disease.^{1,2}

Laennec's Cirrhosis

His researches helped him in understanding the liver disease, cirrhosis. He coined the term cirrhosis, using the Greek word (kirrhos: tawny) that referred to the tawny, yellow nodules, separated by a fine fibrous tissue as characteristic of the disease. Laennec's cirrhosis used to describe micronodular cirrhosis (growth of small masses of tissues in the liver that cause degeneration of liver function). Laennec's cirrhosis, a disease associated with inflammatory polyarthritis, is named after him.^{1,2,9}

Laennec Thrombus

It is an antenatal thrombus in the heart.

Laennec's Pearls

Refers to sputum produced by asthmatics.²

Heart Sounds

Laennec familiarized himself with normal sounds of heart and described the abnormal sounds secondary to diseases of heart valves, which were later verified by postmortem examination. In both of his books, the sections of heart were not nearly as significant as that of chest because the physiology of the heart was understood very little at that time. However, Laennec distinguished two heart sounds, attributing the first heart sound to ventricular systole and the second sound to atrial systole.

Hamman's Murmur

Also known as Laennec–Hamman symptom, Laennec–Muller–von-Bergmann–Hamman symptom or Hamman's crunch is a crunching sound heard over the precordium due to spontaneous mediastinal emphysema. Laennec also announced classification of anatomical lesion into encaphaloid and cirrhosis type.

ACHIEVEMENTS/AWARDS

- Within a year of entering Ecole Pratique, Laennec obtained first prizes in both Medicine and Surgery at medical school. The following year, in June 1802, he published his first paper and while still a student, published a number of papers on such noble topics as peritonitis, amenorrhea, prostate gland, liver diseases, and tubercular lesion.
- In 1804, his doctoral thesis on relationship of the ancient Greek Hippocratic doctrine to practical medicine was accepted and he was elected to the Societe de l'Ecole de Medicine, formerly the Royal Society of Medicine.
- He became an editor and contributor to the esteemed "Journal of Medicine, Surgery, and Pharmacy."
- With the invention of stethoscope in 1819, he became a lecturer of international repute.
- In 1822, Laennec was appointed chair and professor of medicine at the College de France and head of the Medical Clinic at Hospital de la Charite.
- In 1823, he was elected a full member of the Academy of Medicine.
- He was made a knight of the Legion of Honor in 1824.
- Rene Laennec was honored by the government with First Prize in Medicine and Sole Prize in Surgery in 1903.
- At the Universite Claude Bernard Lyon, one of the four medical schools is named after Laennec.

Tragic End

Laennec's teachings were widely known and had gained respect all over the Western world. Unfortunately, Laennec was unable to accomplish his widely acclaimed masterpiece in good health. The writing of the book had fully exhausted him, and a month before publication, he was forced to resign his hospital post and give up his practice.

Never having enjoyed the robust health, Rene Laennec was diagnosed with tuberculosis in April 1826. The person who could hear the abnormal sound from his own chest through his own invention, the stethoscope, died of cavitating tuberculosis on August 13, 1926, aged just 45 years. (Those whom God loves die young. Good men also die, but death cannot kill or erase their names.)

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