Auenbrugger and Laënnec

Two pioneers who have demarcated the development of Western thoracic medicine

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With the publications in 1761 of Giovan Battista Morgagni's (1682-1771) 'De sedibus et causis morborum' (On the Sites and Causes of Diseases),[1,2] pathological anatomy became a science in its own right. Morgagni's aim was to try and correlate the symptoms of a disease as it developed with findings at post mortem.[3] Although this found immediate application in surgical disorders, where lesions were often visible and palpable, it was not thought to be equally useful in cases of internal ailments as long as physicians were unable to explore what was happening to internal organs during life.[4] This was made possible with the clinical diagnostic procedures pioneered by Leopold Auenbrugger (1722-1809) and by René Théophile Hyacinthe Laënnec (1781-1826).

Auenbrugger, (Figure 1) senior physician to the hospital of the Holy Trinity and the Spanish Military Hospital at Vienna, introduced percussion of the chest as a diagnostic tool. It is said that this son of an Austrian innkeeper from Graz first latched on to the diagnostic potential of percussion after he had observed his father tapping wine barrels in his cellar. Leopold studied medicine in Vienna during the time that the medical school there was being reformed along the lines of the Leyden school by the Dutchman Gerhard van Swieten (1700-1772). Auenbrugger was blessed with a musical ear and this undoubtedly helped him unravel the dullness and resonances which he elicited through the percussion of the chest and correlate them to underlying pathological processes. He published his findings in 1761,[5] as a modest little volume of 75 pages, 'Inventum novum in percussione thoracis ut signo abstrusos interim pectoris morbis detegendi thoracis'. (Figure 2)

Figure 1:
Leopold Auenbrugger

Auenbrugger established that by percussing the chest wall a careful clinician could obtain almost as much information about underlying pathology as if he were looking through the chest. It was thus possible to diagnose abscesses, areas of collapse, consolidation of the lung, air in the pleural cavity, pleural effusion and different kinds of enlargements of the heart.[6,7]

He was also an accomplished musician and at the Emperor's request wrote the libretto for a comic opera, Der Rauchfangskehrer (The Chimney Sweep) for the court composer Salieri. Its first performance was reported to have been 'ein Kolossales Succes'! Although he was ennobled in 1784 his new method of clinical examination was not immediately widely accepted. Indeed it is said to have been given


LEOPOLDI AUENBRUGGER

INVENTUM NOVUM

EX

PERCUSSIONE THORACIS HUMANI

UT SIGNO

ABSTRUSOS INTERNI

PECTORIS MORBOS

Figure 2:
Auenbrugger's Monograph on percussion

only a muted reception by his contemporary, Anton de Haen (1704-1706), one of Herman Boerhaave's (1668-1738) star pupils, who as Professor of Medicine in Vienna did a lot to introduce thermometry. Auenbrugger was well aware that it was not easy for innovations to be accepted by one's professional colleagues, for in the introduction to his book he wrote: '... it has always been the fate of those who tried to improve their arts or sciences to be beset by envy, malice, hatred, detraction and calumny'.[8] He was being perhaps a little paranoid but not totally so.

The importance of percussion as a bedside skill in the clinical examination of a patient was however fully appreciated by Jean Nicolas Corvisart (1775-1821), Napoleon's personal physician. As the first professor of medicine at the Hôpital de la Charitè he had plenty of opportunity to introduce this clinical method of examination to his many students among whom was Laënnec.[9] In 1808 he published an annotated translation in French, 'Nouvelle Méthode pour reconnaitre les maladies internales de la poitrine' of Auenbrugger's monograph in which he gave full credit to the Austrian physician. The first English translation by Sir John Forbes (1787-1861), 'A new invention for Percussing the Human Chest to Detect Hidden Signs of Disease' had to wait for a further 16 years before being published.[6] Auenbrugger's method was further improved upon by Pierre Adolphe Piorry (1794-1879)[10] and Josef Skoda (1805-1881).[11,12]

Both Auenbrugger and Corvisart are considered to be important forerunners of the greatest medical revolutionary of the nineteenth century, Laënnec (Figure 3). The latter was born in Quimper, in Brittany, and lost his mother when he was only five years old. René spent his later childhood first with an uncle, a curé, who had to flee to England from the Revolution and subsequently with another uncle, a medical practitioner at Nantes who subsequently became Rector of the University.[13] Laënnec's name is forever linked with the invention of a simple diagnostic aid, the stethoscope.[14] The word, a combination of two Greek words, 'chest' and 'to view' is curiously a misnomer because whilst it aids in the auscultation of sounds emanating from inside the chest it certainly does not permit the viewing of any thoracic organs.

Laënnec described what led to his invention during the examination of a somewhat buxom patient, Mlle de Surenne, in 1818: 'As I realised that both percussion and direct auscultation were almost useless through the layer of fat, I recalled from boyhood a familiar fact of acoustics, namely that if one places one's ear at the end of a piece of timber one can hear very distinctly the scratch of a pin at the other end ... I therefore took a paper notebook, rolled it up tightly, applied one end to the precardiac region and listened at the other. I was as surprised as I was pleased to hear the heartbeats much more clearly and

Figure 3:
René Théophile Hyacinthe Laënnec

distinctly'.[15] As with Auenbrugger, a simple boyhood observation led Laënnec to a discovery that was to deeply affect the practice of medicine.

Laënnec performed a number of experiments to establish the best material to use and to determine the right length, the correct internal measurements and most convenient shape. He produced a hollow wooden tube about 30cm long and 5cm in diameter, widening into a funnel at one end and fitting into the doctor's ear at the other (Figure 4). His observations, reported to the Paris Académie des Sciences, were at first met with disbelief. Within a few years however the use of the stethoscope had become widespread not only in France but also

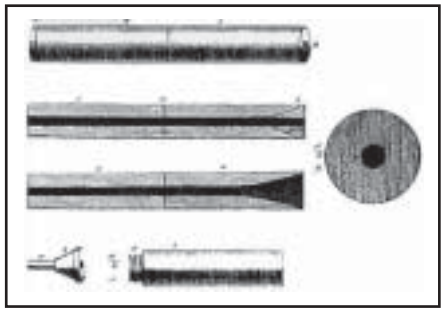

Figure 4:
Laënnec's own design for a stethoscope

in a number of other European countries. Forbes, who had earlier translated Auenbrugger's work, became an admirer of Laënnec. He translated into English his work, first published in Paris in 1819 as 'De l'auscultation médiate, ou traité du pronostic des maladies des poumons et du coeur'.[16] Forbes was however sceptical as to whether this 'ingenious instrument' would ever 'come into general use' in England 'because its beneficial application requires a good deal of trouble and skill but also because its whole character is utterly foreign'. In addition Forbes felt that 'To Englishmen there will always be something ludicrous in the image of a grave physician listening to a chest through a long wooden tube as if the disease were a living thing in communication with him ....' This Scottish physician had something even more damning to say about English clinicians: 'there is in this method', Forbes wrote, 'a sort of bold faith in the physical examination of patients wholly alien to English medicine, more accustomed to calm cautious philosophical musings'.[17] He could not have been more wrong!

Laënnec's medical and scientific achievements were many. Based on clinical and postmortem findings he described many respiratory ailments ranging from tuberculosis and asthma to bronchiectasis, a condition he called 'bronchorrhées purulentes'. He was eventually appointed to the Chair of Medicine at the Collège de France in succession to Corvisart. Laënnec died of tuberculosis almost certainly picked up in the post mortem room.[18]

Percussion and auscultation helped the physician obtain an objective view into a patient's illness. It may well be worth quoting here what one of Laënnec's students, Jean Baptiste Bouillaud (1797-1881) had to say in his book 'Essai sur la philosophie médicale et sur les généralites de la clinique médicale' published in Paris in 1836: 'C'est ainsi, par exemple, que dans les maladies de poumon et du coeur, l'oreille, s'il m'est permis de parler de la sorte, voyant et touchant ces organes, receuille, au moyen d'un examen attentif, des signes qui, comme l'a dit Laënnec, rendent le diagnostic de la plupart des maladies dont il s'agit aussi sûr que celui de certaines maladies chirurgicales, telles que les fracturis et les luxations entre autres'. (... in diseases of the heart and lungs, the ear, if I may so express myself, 'seeing' and 'touching' these organs, by means of an attentive examination picks up signs which, as Laënnec said, render the diagnosis of most of the ailments in question as certain as that of certain surgical conditions such as fractures and dislocations).[19]

Decades would have to pass before radiography would make the next significant contribution to the diagnosis and follow up of diseases.[20] It was in fact on the night of November 11th 1895 that Wilhelm Conrad Röntgen (1845-1923), professor of Physics at the University of Würzburg in Bavaria, while investigating the passage of an electric current through a vacuum tube, discovered X-rays.[21] Chest X-rays were to transform the diagnosis of pulmonary diseases especially tuberculosis, but Auenbrugger's and Laënnec's introductions still form an integral part of every clinical examination.

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