Presentation, December 5, 2012
Dennis G. Pappas, Sr.
"The War of the Turks: A History of the Origin of the Specialty of Laryngology"

Laryngology is one of five specialties that started in a period of medical evolution or new development (c. 1800-1860). That is, the medicine of antiquity was ending and the new scientific medicine was beginning. So to get an image of this set of conditions I want to review the treatment of the final illness of George Washington (who died of an acute inflammatory lesion of the pharynx-larynx) and to briefly express two chains of events that were monumental in the formation of scientific medicine.

George Washington caught a cold and within twelve hours complained of slight difficulty breathing and a "stricture of the throat". He could not gargle yet could speak without constraints such as hoarseness. Treatment by his physicians consisted of (1) three bleedings over a twenty-four hour period that totaled 100 oz.; (2) two blisters (several hours apart) utilizing ground "Spanish fly" mixed with alcohol applied to the skin and covered with warm moist flannel (this was used as a "counter-irritant" to remove swelling and toxins from the lesions); (3) two cathartics, calomel two oz. given hours apart, one with an enema; again for "counter-irritation"; (4) an emetic, probably ipecac; (5) a cataplasm to the neck which was simply ground flaxseed, ground and mixed with a solution and heated. Within forty-eight hours from onset of his illness Washington passed on to his rewards.

Comments:

- Hippocrates would have well been at home with this treatment except that he was reluctant to "let blood".
- There was no physical examination and no report that the physicians even looked at the throat. In the medicine of antiquity physical examination was not necessary – the treatment was the same regardless of the lesion.
- The 100 oz. of bloodletting is equivalent to six pints or three quarts of blood, one-half of the total blood volume; the procedure could have helped lead to Washington's demise.

Conclusion: Medicine for twenty-two centuries did not view disease as a localized phenomenon.

Set in motion was a chain of events that was an inception of the new scientific medicine. Battista Morgagni discovered an association between autopsy and clinical findings. He published his "Seats and causes of diseases…" at the age of seventy-nine. He concluded that the organ was the seat of disease. During that period, the basic science term pathological-anatomy emerged.

About 40 years later Xavier Bichat of Paris more precisely placed the seat of disease in mucosal, neurological, muscular tissue. Another basic science term was coined, histology. His microscope was more powerful than Morgagni's.

Retracting back to 1761, another important event occurred. Leopold Auenbrugger of Vienna described percussion, a physical examination tool. He tapped the chests of his autopsy subjects then injected fluid into their lungs and could elicit a different sound and was able to apply these findings clinically. He said that this idea came from a childhood experience. Auenbrugger's father was an innkeeper, and young Leopold helped by tapping the kegs to find the level of the brew.

Auenbrugger's work went unnoticed until some fifty years later when Jean-Nicolaus Corvisart was searching for a physical-examination tool to apply clinically to his autopsy findings. As a result of pathological anatomy findings and employment of percussion, Corvisart differentiated pulmonary from cardiac diseases, defined carditis, and was first to identify congestive heart failure.

This chain of events leads to Rene Laennec, the astute pupil of Corvisart. Laennec employed percussion, taught to him by his teacher. He had, he said, a young patient that was so stout that percussion was out of the question. Also, he was too shy to put his ear against her chest to listen to her heart sounds. He rolled a quire of paper, and behold, he heard magnified sounds of pathology (an idea Laennec conceived after watching children talk through a hollow log).

From such a chain of events, auscultation became the crowning glory of physical diagnosis. Moreover, Laennec did more than inventing the stethoscope. His monumental work on pulmonary diseases gave his successors impetus in diagnosis of all pulmonary diseases utilizing percussion and auscultation.

The second chain of events is to mention the name of Johannes Müller, who along with his numerous famous pupils (Jacob Henle, Albert Kölliker, Theodor Schwann, Hermann Helmholtz and with hundreds of others), did so much to form the basic sciences that established the foundation of scientific medicine. Müller was prophetic that his students work scientifically in the framework of chemistry, physics, and structural anatomy. Because of his insistence the laboratory became the main current of German medicine in the nineteenth century. Typically the German doctor saw patients till say 4:00 pm, then worked in the laboratory for hours doing experiments. There is a famous quote from Jacob Henle, an early pupil of Müller: "Those were great times. Any day a bit of animal tissue, shaved off with a scalpel or picked to pieces with a pair of needles, might lead to important ground breaking discoveries."

Within this network of activity the specialty of laryngology was forming, notably by two men. Ludwig Türck of Vienna was a physician at the University of Vienna, whose faculty, recognizing notable traits, sent him to Paris to study experimental physiology under Francoise Magendie. He returned to Vienna after one year. His first project was to sever the spinal cord of an anesthetized dog. Degeneration of the cord was noted distal to the lesion. He reported this finding to the medical society only to find that Augustus V. Waller (Wallerian degeneration) had reported it weeks earlier. Türck's work went unnoticed.

The following year (1850), Türck caused a lesion of the spinal cord of an anesthetized dog and realized paralysis on the side of the lesion, numbness on the opposite side of the dog's body. Again he was notified by the medical society that Edward Brown-Sequard (syndrome) had reported the findings months before. Again Türck's experiment went unnoticed. Yet his name is familiar in the history of neurological physiology – having identified three tracks in the brain, and for tracing cutaneous nerves from the spinal tract.

The other originator of the specialty was Johann Nepomuk Czermak of Prague. He was a physician-physiologist who had a close working relationship with Jan Purkinje of Prague (an early pupil of Müller; in a hand-down fashion Müller, Purkinje and Czermak had an interest in the physics of phonation). Historically, Czermak is most noted for his work on the vagus nerve. He had tenures at the Universities of Krakow, Prague, Pest, Vienna, and Breslau.

In the summer of 1857, Türck himself made some small mirrors with long handles. He made notes of the patients' larynx he examined in the wards. Direct sunlight was used, a light source that is

too diffuse for such an examination. As autumn approached he put them away on his desk planning to continue the experiment in the spring when the light would be brighter.

In the winter of 1858, Czermak made a visit to Türck, saw the mirrors on his desk, and asked to borrow one; Türck granted it. Later, in March 1858, Czermak gave a presentation to the Vienna Medical Society on the observation of his own vocal cords using artificial light and a small mirror. Türck was irked; the following week at the Vienna meeting he asserted his priority, claiming that it was his idea and his mirror. Then at the following meeting Czermak acknowledged the priority question, a remark he was to mention for the first and last time regardless of his numerous presentations and publications. He aggravated the situation by adding fuel to the flame, stating "Herr Türck simply comes too late," relating to those previous discoveries for which Türck received no credit. To say the least, Türck was even more vexed and provoked.

At these meetings, and those that ensued, the attendees coined the term, "War of the Turks."

Later in 1858, Türck presented "Conclusions of a Larger Treatise Concerning the Larynx." In the beginning of 1858, Czermak presented "Seven Pathologic-Laryngeal Cases," followed (March of 1859) by Türck's paper by the same title.

By 1860, Czermak published a booklet, "On the Laryngoscope and its Employment;" at the end of the year Türck followed with his book, "A Practical Guide to Laryngoscopy." Both were translated into French and English, of course Czermak's book first then Türck's.

Czermak was skillful and inventive: (1) He traveled to the great cities of Europe to propagate the new science, many of his students became prominent laryngologists (e.g. Morell Mackenzie of London). (2) By reversing the laryngeal mirror he visualized the vault of the naso-pharynx and thus is credited for initiating the specialty of rhinology. (3) He introduced photography and stereography of an internal organ and the first three photographs of the larynx are displayed in a Vienna museum.

Disbursement of the feud, "War of the Türcks": (1) Students from all over the world flocked to Vienna at the time to take courses – the feud was the talk of the town and became a discussion topic of medical society meetings; (2) hostility among students of Czermak and Türck; (3) clashes among universities claiming priority rights (Czermak had been professor at the University of Pest); (4) discourse upon legal action taken by the courts on priority rights.

The "War of the Türcks" ended after three years. The Paris Academy of Science chose to honor the creativity of laryngology. They showed the wisdom of Solomon, calling for a split-decision. Türck was given the title of progenitor of the specialty of laryngology: to Czermak the honor of first user of the laryngoscope, artificial illuminator, and first pioneer of the specialty. But one of the liveliest disputes of medicine did not go in vain for because of the "War of the Türcks" laryngology grew the fastest of all specialties of this era.

As for Türck, he went back to the basics, pathological anatomy, the art of autopsy findings and clinical laryngeal correlation. He published his opus magnum in 1866, a text utilized by students for several decades.

An interjection: Emanuel Garcia, a singing meister teaching in London, was on holiday in Paris strolling in the garden of the Palais-Royal. He noticed the sunlight glare of one of the window panes, secured a dental mirror, and was able to examine his vocal chords. He described what he saw to the Royal Society of London in 1855, three years before Türck's idea. Garcia's 100th birthday was celebrated

in 1905, in London, with attendees from all over the world. Garcia protested he did not know what all the fuss was about, “that spiegel only cost six francs.”

Final section, regarding the book collection: there are two methods for book collecting. One is to buy whatever is available because rarities may present infrequently; the other method is the road map plan. The event book(s) are the pathfinder or great discovery works, as we showed in the title pages of the publications of Türck and Czermak. There are road map books that lead to the event book(s). Typically, in anatomy it’s a folio from an anatomist of the Renaissance. Julius Casserius’ *De vocis…* presents the most beautiful volume for laryngology. Ornaments and symbolism drawn by an artist endowed this book with its charm. Casserius’ work was particularly known for its accuracy.

Another road map book, for rhinology, is *De Catarrhis*. Conrad Schneider proved that the origin of nasal secretions was from the anterior and posterior nasal mucous membranes rather than the cranial cavity, a dogma that existed some twenty centuries.

Another example of a road map book for laryngology is Johannes Müller ‘s book on the physics of generating specific sounds.

There is typically a work that is written after the event that is enriched with detailed anatomy. This road map book is for the joint chief of staff and is one that the surgeon can take into the operating room and use as a “cookbook”. Emil Zuckerkandl provided this work for rhinology; Hubert Luschka’s anatomy text (1873) may provide it for laryngology.

Conclusion: Medicine has always wanted to be scientific. Even the great Greek philosophers of 800 BC took medicine away from the priests claiming that there was a primary cause for all things. Four hundred years later Hippocrates, himself a philosopher, insisted upon the value of observation and his acceptance of disease as a natural phenomenon. During the following twenty centuries, renowned men of medicine tried to make medicine scientific though the tool to do so was unavailable. When the microscope was invented in the seventeenth century, Morgagni was an infant. In the embryonic stage of microscopy he concluded that the organ was the seat of disease. Bichat, with a more powerful microscope, concluded more precisely that the tissue was the origin of disease. Achromatic lens removed aberrations in the microscope (c. 1830) and Virchow completed this chain of events that resulted in the conclusion that the cell was the origin of life-disease. The microscope was the energizing tool of scientific medicine.

Specialization emerged in the early 1800s as part of this revolution. Technology inaugurated the specialties; more particularly the employment of technology energized the physician-laryngologist to sit and manipulate a mirror in the pharynx, a reflector mirror from his mouth, eye glasses or head band, and to develop manual dexterity in the process.