

CHICAGO MEDICINE AND PEPTIC ULCER DISEASE

By James L. Franklin, MD

The article, "The Rise of Peptic Ulcer, 1900–1950," appeared in *Perspectives in Biology and Medicine* in autumn 2003. It was written by Gerald N. Grob, the Henry E. Sigerist Emeritus Professor of the History of Medicine at the Institute for Health, Health Care Policy, and Aging Research, at Rutgers University, New Brunswick, New Jersey. In reviewing the history of medical thinking about this important illness, the author cites the physicians of the first half of the 20th century who contributed to our understanding and treatment of peptic ulcer disease.

In reading the article, I was impressed with the number of physicians and scientists who were members of the Chicago medical and scientific community. It seemed that it would be of interest to Chicago physicians to review who these individuals were and the contributions they made to the care of patients suffering from this illness.

While gastric ulcers were recognized during the 19th century as an important cause of gastrointestinal illness, it was not until the first decades of the 20th century that the role of duodenal ulceration was also recognized. The British surgeon Berkley G.A. Moynihan made a major contribution to recognizing the importance of duodenal



Dr. Bertram Sippy, whose name became synonymous with the medical treatment of peptic ulcer disease, lectures at Rush Medical College, circa 1920.

Photo: Rush University Medical Center Archives

ulcer disease. Not surprisingly, he was a strong advocate for surgical intervention for both gastric and duodenal ulceration, recommending both surgical excision and/or gastro-enterostomy to empty the stomach, thereby allowing the ulcer to heal spontaneously.

In Chicago, Bertram Welton Sippy (1866–1924), whose name became synonymous with the medical treatment of peptic ulcer disease, achieved international fame for his comprehensive approach to the care of these patients. Sippy was born in Richland County, Wisconsin. After two years at the University of Wisconsin, he entered

Rush Medical College in 1887, graduating in 1890 at the age of 23 years. He secured an internship at Cook County Hospital, placing second in a highly competitive examination and subsequently graduated at the top of his internship class.

After serving as a surgeon for the Northern Pacific Railroad in Missoula, Montana, and studying for 18 months in Vienna, he returned to Chicago in 1897 and was appointed to the faculty of Rush Medical College and Cook County Hospital.

He distinguished himself both as a superb diagnostician and teacher. Along with Frank Billings and James B. Herrick,

he was an outstanding member of the Rush faculty. Going abroad again in 1902, Sippy spent six months in Berlin studying digestive disorders. As a result of experience gained during this trip, he made a major contribution to the treatment of cardiospasm (achalasia) through the use of esophageal dilatation.

It was in the area of peptic ulcer disease that Sippy made the contributions for which he is best known. He recognized the characteristic pattern of pain in the diagnosis of ulcer disease and the role hydrochloric acid played in its production. He developed a thorough understanding of the natural history of the illness and of the indications for surgery.

His rigorous and comprehensive approach to treatment seems quixotically antiquated to 21st-century physicians, chastened by pressures to limit hospital stays and made complacent in the treatment of this illness by the ease of diagnosis and the availability of powerful drugs, in the form of histamine receptor blocking agents and



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Photo: Rush University Medical Center Archives

the more potent proton pump inhibitors.

Sippy's program of treatment included several weeks in the hospital, at least two of them spent at complete bed rest, and the absolute prohibition of work for a six-week period. A carefully regulated regimen began with hourly feedings of milk and cream along with bismuth subcarbonate, magnesium oxide and calcium carbonate. Also, regular emptying of the stomach with an Ewald tube and titration of acid were a regular part of the treatment and study of these patients. Notable was the fact that physicians throughout the country and from abroad came to observe and learn the "Sippy Method" of treating peptic ulcer disease.

Walter Lincoln Palmer, whose career was based at the University of Chicago and who pioneered the development of the clinical specialty of gastroenterology, had served as an intern at Rush Medical College during the "Sippy Era." He described the phenomenal practice that Sippy had developed between 1897 and his sudden death in 1924 of a heart attack. Palmer noted the fact that he and his associates would consistently fill the 100 beds allotted to his practice at Presbyterian Hospital and the 105 beds at three other local hospitals.

Walter Lincoln Palmer was born in 1896 in Evanston, Illinois, and educated at the University of Chicago and Rush Medical College. He was influenced by two great teachers from those institutions, the physiologist A.J. Carlson and Bertram Sippy. Reviewing the contributions Palmer made to our understanding of peptic



Dr. Walter Lincoln Palmer contributed to the clinical aspects of peptic ulcer disease through studies that focused on differentiating benign and malignant gastric ulcer.

ulcer disease, three areas of thinking stand out.

The first relates to the cause of pain in ulcer disease. Carlson (Ajax as he was known by his colleagues) believed that the cause of pain was mechanical and related to motility. He was influenced by the observations of Walter Cannon and early roentgen observations of the gastrointestinal tract.

Palmer came down on the side of this controversy favoring the role of hydrochloric acid. He had done experimental studies eliciting typical ulcer pain during the perfusion of the stomach with 0.1 N hydrochloric acid. This experiment might have constituted a clinical test for ulcer disease.

He further contributed to clinical aspects of peptic ulcer disease through studies that focused on differentiating benign and malignant gastric ulcer. So great at this time was the problem of refractory duodenal ulcers that irradiation of the fundus of the stomach as a therapeutic method of reducing acid secretion and promoting the healing of ulcers was a major area of investigation by Dr.

Palmer and his colleagues at the University of Chicago.

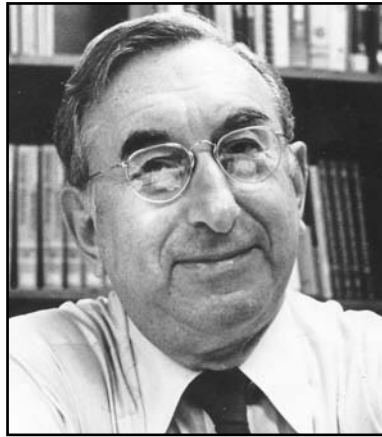
In 1974 Palmer published a monograph: "Gastric Irradiation in Peptic Ulcer" summarizing the experience at the University of Chicago with this mode of therapy.

Included in this monograph are the results of a controlled randomized study performed by Dr. Erwin Levin, a member of the section of gastroenterology at the University of Chicago, who employed the methods that had been developed in Chicago in a private practice setting in Cleveland.

This study and the cumulative results surveying more than 1200 patients who were treated at the University of Chicago confirmed that the method was successful in reducing the recurrence rate of ulceration and the need for surgical intervention. The adverse effects of gastric radiation were by then recognized: in particular, atrophy of the upper pole of the left kidney and hypertension.

The data was analyzed for an increase in the incidence of malignancy and none was found. That this form of therapy would be superseded may seem today self-evident, yet the chronicity and severity of peptic ulcer disease coupled with the lack of efficacy of existing medication and the morbidity associated with surgery propelled clinicians to seek alternative methods of treatment.

Gastric freezing is another example of such an approach to the problem of chronic recurrent ulcer disease. Owen H. Wangenstein, of the University of Minnesota, developed a method that employed the placement of a gastric balloon through which a coolant was



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circulated at minus 10 degrees C for 50 minutes in an attempt to treat both gastrointestinal hemorrhage and chronic peptic ulcer disease.

This method of treatment was quickly taken up by the medical profession and offered by many clinics throughout the country for patients suffering from chronic ulcer disease. In a landmark paper published in the *New England Journal of Medicine*, a double-blind study with a sham treatment group was conducted by five institutions including the University of Chicago.

The result of that study conclusively showed the lack of efficacy of this form of treatment. While it came at a time when enthusiasm for gastric freezing was already on the wane, the study serves as a model for the proper evaluation of new medical devices.

The gastric freezing studies performed at the University of Chicago were conducted under the direction of Dr. Joseph B. Kirsner. From 1930 well into the 1960s, Palmer and Kirsner and members of the section of gastroenterology published hun-

dreds of articles on the physiology of gastric secretion and various clinical aspects of the diagnosis and treatment of peptic ulcer disease. Dr. Kirsner was born in Boston in 1909 came to Chicago in 1933, serving first on the staff of the Woodlawn Hospital but shortly thereafter joining the faculty of the University of Chicago.

His contributions to the field of gastroenterology are extensive, and he is recognized as a leader in the field and for his contributions as a physician, educator and expert in inflammatory bowel disease. He has made contributions throughout the entire field of gastroenterology and has played an important role in the formation of our national societies for the study of gastrointestinal and liver disease.

Looking at the area of peptic ulcer disease in particular, his bibliography contains numerous publications dealing with the nature of gastric secretion and the efficacy of anti-acids in controlling acidity. His PhD thesis and numerous clinical publications brought to the attention of the medical profession the problem of alkalosis and renal insufficiency resulting from the extensive use of sodium bicarbonate and calcium carbonate, including the "Sippy Regimen" in the treatment of ulcer disease.

The important role of endoscopy in the diagnosis and treatment of peptic ulcer disease is evident to all physicians who treat patients with this disease. Accurate correlation of symptoms and pathology, the reliable differentiation between benign and malignant gastric ulcers, the recognition and treatment of *Helicobacter pylori* infection, and the diagnosis

and endoscopic treatment of bleeding ulcers are all taken for granted.

It is hard to envision the care of patients at a time when none of this was possible. Rudolph Schindler, founder of the American Society for Gastrointestinal Endoscopy, was born in Berlin in 1888. He received his doctorate in medicine at age 22 years and served in the German Armed Forces during World War I.

In the early 1920s his interest in digestive disorders was at first furthered by his use of early rigid prototypes of the gastroscope. He then collaborated with German instrument makers to produce his semi-rigid gastroscope, which featured a series of interlocking prisms that allowed flexibility in the distal third of the instrument. In 1924, Chicagoan Marie Ortmyer, who had observed the Schindler Clinic in Vienna, urged Walter Lincoln Palmer to personally witness Schindler's gastroscopies during a European trip in 1926.

Several years later, Palmer learned that Schindler, whose work by then had achieved international recognition, was being held in a Nazi concentration camp because there were Jewish relatives on his father's side of the family. This led Palmer to initiate a national effort to pressure the German government to free Schindler and secure a visa that would enable him to emigrate to the United States.

In 1934 the Schindler family of four arrived in Chicago and he joined the section of gastroenterology at the University of Chicago. With the aid of Palmer, he was able to publish in 1937 the first English edition of his book "Gastroscopy: The

Endoscopic Study of Gastric Pathology."

The chapter in this work devoted to gastric ulcers correlates the clinical, x-ray, and gross pathologic findings with color endoscopic drawings of numerous examples of the ulcers he had observed as well as jejunal ulceration in the post-operative stomach (artist's drawings at this time were the only means of documenting endoscopic findings; endoscopic photography was not yet a reality).

Schindler's career at the University of Chicago continued until 1943, when he accepted a position at what is presently Loma Linda University in Los Angeles. He died in 1968 at the age of 80 years in Munich, Germany.

Among the many physicians who came to Chicago to observe and learn gastroscopy from Schindler was the Chicagoan Leonidas Berry. Berry had earned his MD degree from Rush Medical College and had set up a gastroenterology clinic at Provident Hospital.

Because of an affiliation be-



Dr. Leonidas Berry introduced gastroscopy at Provident and Cook County Hospitals, where he would train some 500 physicians in the technique.

Photo: Rush University Medical Center Archives

tween the University of Chicago and Provident Hospital, Berry observed and participated in Schindler's gastroscopy clinic and subsequently introduced the technique at Provident and Cook County Hospitals, where he would train some 500 physicians in the technique.

These important events laid the groundwork for advances in decades to come in the diagnosis and, eventually, the endoscopic treatment of bleeding from peptic ulcer disease.

Chicago surgeons also made their contributions to our understanding and care of patients with peptic ulcer disease. None stands out more prominently than Lester Reynold Dragstedt, who was born on Oct. 2, 1893, in Anaconda, Montana. He came to the University of Chicago at the urging of Anton J. Carlson, a close friend of the Dragstedt family. He received his BS and MS degree in physiology from the University of Chicago in 1916.

After several years of a career devoted to physiology, he subsequently earned his MD and obtained his surgical training in Europe, largely in Vienna. When Albert Merritt Billings Hospital opened in 1927, he became a member of the department of surgery and ultimately its chairman in 1948. His publications in gastrointestinal physiology began with his first publication in 1916, and he is best known for his studies on the physiology of the stomach and the pathogenesis of peptic ulcer.

These studies recognized the role of acid hypersecretion in the pathogenesis of peptic ulcer as well as the negative feedback mechanism that existed when

acidification of the antrum of the stomach suppressed acid secretion by the fundus of the stomach through the inhibition of the release of the antral hormone gastrin. It was not until January 1943 that he performed his first transthoracic vagotomy on a patient suffering from chronic ulcer disease.

The patient, who was unwilling to accept the risks of subtotal gastrectomy, the recommended surgical treatment at that time, agreed to the untested transthoracic vagotomy. Dragstedt published his experience with his first two patients, both of whom had obtained immediate relief from their symptoms.

Subsequent publications of a larger series of patients led to the adoption of the transabdominal approach and the accompanying gastroenterostomy to avoid the problem of gastric stasis associated with transthoracic vagotomy. In 1959, Dr. Dragstedt, having reached the mandatory age of retirement, left the University of Chicago and accepted an offer from the University of Florida to become a research professor of surgery and physiology. There he continued to do research and to teach until his death in 1975 at the age of 82 years.

Another member of the Chicago surgical community who made a major contribution to the surgical care of patients with peptic ulcer disease was Dr. Karl Meyer. In his capacity as the chief of surgery and director of Cook County Hospital, he was a leader in educating a generation of surgeons to handle the complications and treatment of chronic ulcer disease.

He published numerous articles on gastric surgery includ-

ing a seminal work in 1936 on the technique of gastrectomy and a series of articles with Irving Stein on the physiology of vagotomy and the use of the insulin test to verify the completeness of surgical vagotomy.

Karl Meyer was born on Sept. 28, 1886, in Gillman, Illinois, and graduated first in his class from the University of Illinois College of Medicine in 1908. He completed an 18-month internship at Cook County Hospital, and then left Chicago to work as a surgeon in Wichita, Kansas, and then in Baker, Oregon.

Returning to Chicago in 1913, he initially sought further training in surgery with Dr. Joseph Beck. In 1914, he became the medical superintendent of Cook County Hospital, where he remained in charge until his retirement in 1967. Ironically, on Jan. 6, 1972, he died as a result of an obstructing duodenal ulcer at the age of 86.

Another school of investigators that traced its roots back to Anton J. Carlson and his laboratory at the University of Chicago included Andrew C. Ivy and Morton I. Grossman. This group would play an important role in our understanding of peptic ulcer disease.

Andrew Conway Ivy was born in Farmington, Missouri, in 1893, and completed his master's degree in 1917 and PhD in 1918 with Carlson. He received his MD degree from Rush Medical School in 1922. From 1925 until 1946 he was chairman of the department of physiology and pharmacology at Northwestern University Medical School.

In 1946 he was named vice president of the University of Illinois, and placed in charge of

the professional colleges. He was forced to resign in 1953 following the events surrounding the Krebiozen scandal. He continued at Illinois as the distinguished professor of physiology and as head of the department of clinical science until 1961. Along with his colleagues at these institutions, he published some 1500 articles during this period proving the existence of humoral mechanisms of gastric and pancreatic secretion and the discovery of the hormone cholecystokinin.

Most notable was his publication in 1950 along with Morton I. Grossman and William H. Bacharach of a volume, "Peptic Ulcer," which comprehensively reviewed the pathogenesis, diagnosis and treatment of the disease through the first half of the 20th century. Sadly, this book is rapidly vanishing from the shelves of our medical libraries.

Morton I. Grossman, a very important name in American gastroenterology and a major contributor to our understanding of gastric physiology, began his investigative career in the laboratory of Dr. Ivy at Northwestern University Medical School.

He was born in Massillon, Ohio, in 1919, and received his initial introduction to science at Ohio State University. In 1941, during his third year of medical school, he transferred from Ohio to Northwestern University Medical School, where he quickly began his work with Andrew Ivy. He earned a combined MD and PhD in 1944.

In 1946 he moved with Ivy to the University of Illinois, where he remained until 1953. Drafted during the Korean War, he was stationed in Denver, where he

served as head of the physiology branch of the Medical Nutrition Laboratory at Fitzsimmons Army Hospital Base.

After leaving the service, he moved to Los Angeles where, at the urging of Dr. Bacharach, he became chief of gastroenterology at the Wadsworth V.A. Hospital. In Los Angeles, he also became director of the Center for Ulcer Research and Education (CURE).

The focus of Dr. Grossman's research, beginning in Chicago and embodied in the hundreds of articles published in conjunction with his fellows and associates, was on the autonomic nervous and hormonal control of gastrointestinal secretions.

In this first decade of the 21st century, the etiology of peptic ulcer disease seems to be neatly explained by infection with the bacterium *Helicobacter pylori* or exposure to non-steroidal anti-inflammatory drugs. At the beginning of the 20th century, no such clarity existed and the multiplicity of factors considered reflected the lack of scientific data.

Focal infection as a root cause was championed by prominent Chicago physicians such as Frank Billings who wrote that "circumscribed and confined infection has long been recognized as an important etiologic factor in systemic disease." The Rush surgeon Arthur Dean Bevan countered in 1930, noting that "focal infection has been made to cover too many sins."

With the recognition of the effect of psychic factors on the function of the gastrointestinal tract supported by the work of Walter B. Cannon and Harvey Cushing's observations on the "interbrain" and ulcer, the clini-



A founding member of the Hektoen Institute, Dr. Frederick Steigmann rejected the notion of racial differences playing a role in the etiology of peptic ulcer disease.

cal focus shifted to the role of psychogenic factors in gastrointestinal illness. In 1930, Franz Alexander (1891-1964) was invited to Chicago by Robert M. Hutchins to become a visiting professor of psychoanalysis.

Alexander, born in Budapest, was considered a brilliant graduate of the Berlin Psychoanalytic Institute. In 1934 he founded the Chicago Psychoanalytic Institute. From his careful observations of a small group of patients, he published a comprehensive survey of psychologic factors in gastrointestinal disturbances and identified a "gastric type" personality in which gastric symptoms were conditioned by repressed aggressive tendencies.

As arcane and uncontrolled as these formulations may seem to clinicians today, a scene from my third-year clerkship in medicine at Northwestern University Medical School at the Lakeside V.A. Hospital is indelibly etched in my memory.

Patients were assigned to four bedrooms and ulcer patients received 12-ounce glass bottles of liquid antacids that

were kept chilled in a specially designed metal container filled with ice. They had a central compartment for the bottle so that hourly doses could be easily taken.

Our team on morning rounds had just exited a room when there was an explosive crash and shattering of glass caused by one of these bottles that had been hurled against the wall in the hallway by a tall, thin, taciturn man suffering from chronic peptic ulcer disease.

Nor was the thinking of the medical community on the etiology of peptic ulcer disease confined to an examination of the individual patient. There were those who tried to take a longer view of the problem and placed the blame for this disease on the price paid for civilization and its progress.

Andrew B. Rivers of the Mayo Clinic wrote in 1934, "the desirable virtues of the modern, intensive, aggressive American, the characteristics which have been eulogized and designated as the cardinal marks of American success, are precisely the characteristics so often replicated in the ulcerous type of patient."

Rivers, looking at the risk of peptic ulcer in a group of 200 blacks living in Texas, wrote in a 1934 issue of the *Archives of Internal Medicine* that blacks were "slow-moving and easy going...untouched by aspiration for culture. Despite unbalanced diets, abuse of alcohol and tobacco, irregular sleeping habits, reckless and unhygienic living conditions, peptic ulcer disease was absent among them."

In a similar vein, Samuel C. Robinson of the department of medicine at the Chicago Woodlawn Hospital opined in the

American Journal of Digestive Diseases and Nutrition that “ulcers were found largely among susceptible individuals of the white race...usually the long thin type who are given to worry and nervous instability...The Negro race in its evolutionary ascent,” he added, “has not yet acquired the habit of worry so peculiar to the white race under pressure of civilized living.”

In 1936 in the same journal, the *Journal of Digestive Diseases and Nutrition*, Frederick Steigmann of Cook County Hospital, challenged the conclusions of these authors in a paper entitled, “The Peptic Ulcer Syndrome in the Negro.” In a study that included a survey of 11 hospitals in eight states and data from Cook County Hospital, he showed that 26% of the admissions for peptic ulcer disease were among blacks.

He specifically challenged the data and opinions of the authors cited above, pointing out that the black patients with peptic ulcer disease that he was seeing in the gastroenterology clinic had the same pressures and socioeconomic concerns that were felt to be characteristic of the white peptic ulcer patients seen

by Rivers and Robinson.

He rejected the notion of racial differences playing a role in the etiology of peptic ulcer disease. Dr. Steigmann advocated that physicians “deal with the problem of peptic ulcer disease in the Negro with the same attitude as he does in the white patient.”

Dr. Steigmann was born in Jordanesti, Austria, in 1905, and came to the United States in 1923. He received his MD degree and a MS degree in pharmacology and therapeutics from the University of Illinois.

Along with Fenton Schaffner, Hans Popper and Joseph B. Kirsner, Steigmann was among the founding members of the American Association for the Study of Liver Disease. He was also among the founding members of the Hektoen Institute. He died on July 6, 1998, at the age of 93 in Champaign, Illinois.

In a very real sense, all physicians in their daily practice and care of patients make a contribution to our understanding and treatment of the disease from which the patient suffers. Bedside teaching gives physicians the opportunity to share their thinking with students and further impact the successful treatment of these patients.

This survey of Chicago physicians who played an important role in the treatment of peptic ulcer disease did not end after the first half of the century. Progress occurs through the accumulation of many small and often unrecognized steps.

The growth of medical specialties and their respective journals plus national and international meetings have led to the rapid dissemination of information, its application and rigorous evaluation.

Although individuals continue to make distinguished contributions to our understanding of the treatment of peptic ulcer disease, no single discovery would seem to stand out more prominently than Barry J. Marshall’s 1983 discovery of *Helicobacter pylori*. Today it is the combined efforts of physician investigators around the world that have become the theater in which these advances are played out. ■

The author wishes to acknowledge the kind assistance of Dr. Joseph B. Kirsner whom he interviewed in the preparation of this article.

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