The Psychosomatic Aspects of Peptic Ulcer

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The psychosomatic aspects of peptic ulcer is a recent title for an old concept.

In 1932 Harvey Cushing (1) wrote his classic dissertation on the relationship of the interbrain to peptic ulcer. He stated that high strung persons are particularly susceptible to peptic ulcer, that the ulcers tend to heal and become symptomatically quiescent when the patient is put on mental and physical rest, and that the symptoms are apt to recur when the victim resumes his former tasks and responsibilities.

But even Harvey Cushing disclaimed any pretense of originality to a novel explanation of the pathogenesis of ulcer formation. He pointed out that as early as 1841 Carl Rokitansky (2) in his "Handbuch der pathologischen Anatomie" discussed acute perforating ulcers, hemorrhage and erosions, as well as simple chronic ulcers which he believed were caused by morbid conditions of the vagus nerve causing diseased innervation of the stomach and that this morbid condition was associated with extreme hyperacidity of the gastric juice. This concept certainly makes Rokitansky an up-to-date minute modern in his concept of the pathogenesis of peptic ulcer. His ideas however were unfortunately swept aside by the influence of the cellular minded Virchow (3). Now it appears that Rokitansky was a full century ahead of his time.

In 1845 Schiff (4) pointed out that there were vasoconstrictor and vasodilator fibers to the stomach, that the vasoconstrictor effects passed by way of the coeliac plexus, whereas the flushing effects were produced by stimulation of the vagus. Thus he anticipated the counterbalancing of the sympathetic and the parasympathetic systems for the control of the digestive system, and that both of these were under the domination of the higher cerebral centers.

Cushing believed that these centers were located in the interbrain or diencephalon which he considered to be the seat of the primitive emotions. In this view he follows the teachings of Pavlov (5).

Cushing was stimulated to reexamine the current existing concepts of peptic ulcer by his unfortunate experience in losing three patients from perforation of the upper gastrointestinal tract following apparently successful operation for tumors of the cerebellum. It was this experience which prompted him to develop his concept of the neurogenic origin of peptic ulcer. He further expressed the view that psychic influences can upset the normal sympathetic-parasympathetic balance of the digestive tract in such a way as to give preponderance to the influence of the parasympathetics with an over-preponderance of vagal activity resulting in an irritative lesion of the upper gastrointestinal tract resulting in ulcer, hemorrhage, perforation, etc.

However, even Cushing and Rokitansky were not the first to postulate the neurogenic origin of gastric disturbances; for as far back as 1790, Comparetti (6) wrote an excellent description of the nervous influences on the digestive processes; and it is quite probable that long before him physicians were fully aware of the psychic processes on gastric function.

Within the past decade, the psychosomatic aspects of peptic ulcer has gained in popularity, and the neurogenic views of Cushing, Rokitansky and others have been elaborated to include psychic factors, thus stressing the importance of the higher cerebral functions, namely, those participating in the psychic processes such as fear, anxiety, frustration etc. in the pathogenesis of peptic ulcer.

Peptic ulcer is one of the outstanding medical problems of the world today. In mortality it ranks tenth as a cause of death in this country, while economically it ranks twelfth as a cause of absenteeism from work. It has been estimated that there are approximately 1.5 million people in the United States above the age of thirty in whom peptic ulcers develop during a ten year period.

In the past hundred years, the general incidence of peptic ulcer seems to have been stabilized at about five per cent as judged by necropsy reports, although there has been a distinct shifting in incidence from gastric to duodenal ulcer. Today there are twelve times as many duodenal ulcers as gastric ulcers according to Eusterman and Balfour (7).

Peptic ulcer is primarily a disease of the white collar strata of society. It occurs among persons who live a high tension life, the hard driving, intelligent, alert individuals. It occurs among professional people as doctors, lawyers, musicians, theatrical folk, business executives and others who live and work under great pressure. It has been aptly called "the wound stripe of civilization."

Under the psychosomatic concept of peptic ulcer the exciting factor of the disease is the stress and strain of life, the unfavorable reactions to the environment, economic maladjustment, financial uncertainties, domestic uncertainties, social upheavals, impending calamities, frustrations of any origin, in fact any of a hundred causes that threaten to disturb

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the peace and equanimity of a well ordered life or threaten to impede the achievement of a desired goal.

The late World War II provided opportunity to study the relationship of the stress of war to the incidence of ulcer in light of the present concept of the psychosomatic aspects of peptic ulcer.

Berk and Frediani (8) writing of their experience with peptic ulcer among military personnel state that it is extremely common among soldiers; that about three per cent of all admissions in an army general hospital are peptic ulcer, but among the digestive complaints it is extremely high. In their analysis of 841 patients admitted to the Gastrointestinal Section of Tilton General Hospital forty per cent had peptic ulcer. This observation is in keeping with the experience of other U. S. Army General Hospitals and approximates the experiences of other countries. The incidence reported from England is fifty-five per cent of all cases of dyspepsia and thirty-three per cent reported by the Germans.

It is the opinion of most military writers that the military service did not cause the ulcer, rather it activated it. In over ninety per cent, military personnel with peptic ulcer are reported to have had symptoms prior to their entry into military service. In the activation of the ulcer syndrome among soldiers, Berk and Frediani consider the most important fact to be reckoned with is the psychosomatic element. In many of the military persons studied there was a remarkable coincidence between the onset of the distress and some unpleasant episode. Some patients were allegedly asymptomatic until the day they appeared before the induction board. Others were free of distress until after the first meal eaten in the reception center. A few were without difficulty until the poor quality of their work made it appear unlikely that they would qualify for an officer’s commission. Further they observed a remarkable recession of previously refractory distress in some patients when their discharge from the army seemed assured and conversely there occurred a recrudescence of distress often with added symptoms in patients who were informed that they would be returned to military duty. They concluded that the psychosomatic aspects of peptic ulcer are outstanding among military personnel and that the influence of anxiety tension and emotional unrest are unmistakable.

The experimental physiologist has added much knowledge to the underlying mechanism of peptic ulcer. Research investigators have succeeded in producing an upper intestinal or jejunal ulcer which resembles human duodenal ulcer both grossly and microscopically. Two methods for producing this type of jejunal ulcer have been developed. One is by the Mann-Williamson operation (9), which consists in performing a gastrojejunostomy in such a manner that the alkaline secretions of the upper intestinal tract are diverted to the distal ileum. In this manner the jejunal mucosa is deprived of the neutralizing effect of the alkaline secretions and so receives the highly acid gastric juice unmodified by the bile and pancreatic secretions which are alkaline in character. In these so called Mann-Williamson dogs or M - W dogs as they are commonly referred to, jejunal ulcers occur in about 98 per cent of the experimental animals in about two to four months after the short-circuiting of the alkaline juices of the upper jejunum to the distal ileum. The ulcers thus produced are similar to duodenal and jejunal ulcers which occur spontaneously in man. The M - W ulcer is chronic and intractable and unless adequate treatment is instituted results in death almost invariably.

Wangensteen (10) and his associates have produced ulcers in many experimental animals by implanting pellets of histamine mixed with beeswax into the muscle or subcutaneous tissue of the animal. This results in a slow constant liberation of histamine which provokes a long continued secretion of gastric juice which produced jejunal ulcers similar to those of the M - W dogs.

Whenever the acid secretion has been made excessive and continuous in experimental animals, the defensive mechanism is overcome and ulcer is produced. Thus it has been demonstrated by both methods that pure gastric juice alone can destroy and digest living and previously unaltered mucosa of the stomach, duodenum and jejunum producing ulcers which appear identical with peptic ulcers found in man.

If gastric juice alone can produce peptic-like ulcers, then why does not everybody have them? Because Nature has provided a defensive mechanism against them. The defensive mechanism against ulcer formation is multiple in character and consists of at least four factors; (1) Food, which is the normal stimulus to gastric secretion is also the chief factor in protecting the gastric and duodenal mucosa physically against the corrosive action of the acid; (2) mucus likewise acts protectively by coating the vulnerable mucosa, also it acts chemically by rendering buffer action against acid erosion; (3) the intestinal juices act chemically. By being alkaline they neutralize the acid contents. These intestinal juices include principally the pancreatic juice, the duodenal juice and the bile; finally (4) there are the humoral substances which act through the blood stream. They possess the ability to depress and inhibit gastric secretion. These humoral substances have been isolated from the duodenal mucosa and from the urine. The intestinal extract is called enterogastrone. Ivy has demonstrated its effectiveness by injecting it intravenously into M - W dogs. He states that he has been able by this method to protect seventy-five per cent of dogs which otherwise would have developed jejunal ulcers. The urinary extract called urogastrone has a similar action. Sandweiss (11) calls his urinary extract, anthelone.

Up to the present century it was generally believed that the stomach was in a state of rest and secreted no gastric juice in the absence of food or psychic stimuli. This view followed the teaching of Beau-