Peptic Ulcer


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Abstract: The conventional biomedical model used for medical research and disease management is a linear model in which the cause-effect relationship is important. In contrast, the model used in psychosomatic medicine is a bio-psycho-social model in which much importance is attached to interactions and relationships among various factors, as well as to the individuality of the patients. When peptic ulcer is studied or treated, it is meaningless to argue about whether this is an infectious or a stress-related disease. Although there is a lot of evidence that the eradication of Helicobacter pylori (H. pylori) prevents ulcer recurrence, the development of ulcers only occurs in several percent of persons infected with H. pylori. It has been estimated that 70–80% of the population aged 40 years or older are infected with H. pylori. Although stress is associated with ulcer development in 30–40% of all patients, many persons who are under stress do not suffer from this disease. The organ affected by stress varies depending on many factors, including individual predisposition (vulnerable organ), smoking, drinking, and dietary habits. Because peptic ulcer is a multifactorial disease, a bio-psycho-social approach adjusted for the individual patient should be applied to its diagnosis and management, with careful consideration of the association of this disease with many factors including H. pylori and stress.

Key words: Peptic ulcer; Stress; Psychosomatic disorder; Lifestyle; Helicobacter pylori

Introduction

Alexis Carrel (who died in 1944) developed the technique of arterial anastomosis and won the Nobel Prize. In his book entitled “Man the Unknown,” he wrote: Despite the remarkable progress in science, little is known about human beings because the mentality of man is not designed to know himself, because his ancestors were too busy, and because he is too complicated. This discrepancy is fundamental. We must clearly recognize the fact that “human science” is the most difficult among all sciences. (The Japanese version of this book was translated by Shoichi Watanabe and published by Mikasa Shobo.)

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He was warning that the mankind stood on the brink of ruin because Europeans were not adequately aware of human nature despite their enormous power attained as a consequence of scientific progress. Whenever I think about peptic ulcer, this warning by Carrel, who was also a critic of civilization, is full of meaning.

Is Ulcer an Infectious or a Stress-Related Disease?

I would like to state my conclusion first: this question is irrelevant. In the biomedical model, a linear model in which clarification of the cause-effect sequence is important, ulcer would be an infectious disease rather than a stress-related disease. There is a lot of evidence that eradication of *H. pylori* prevents the recurrence of peptic ulcer, particularly duodenal ulcer. It is believed that 70–80% of individuals aged 40 years or older are infected with *H. pylori*. Among them, however, only a few percent develop ulcers.

With respect to the association between peptic ulcer and stress (a psychosocial factor), numerous animal experiments performed to date have demonstrated a strong association of stress with the development and recurrence of ulcer disease. However, ulcers are related to stress in only 30–65% of the patients. Do all individuals who are under stress suffer from peptic ulcer? The answer to this question is also obviously negative. In the biomedical model, the cause-effect relationship is important. However, in persons exposed to stress, the organs that are affected tend to vary depending on the interaction of stress with individual predisposition (the vulnerable organ concept) and many other risk factors. Consequently, peptic ulcer is a multifactorial disease.

According to a recent report, whether bacterial infections become manifest or not depends on the presence or absence of stress and on the state of immunity.

The Bio-Psycho-Social Viewpoint

Engle advocated use of the bio-psycho-social model for psychosomatic medicine. He stated, “In diseases for which the pathogenesis involves multiple factors, it is impossible and meaningless to identify individual etiologic factors. The system as a whole, as well as interactions and relationships among individual risk factors, is important.”

From this viewpoint, both *H. pylori* infection and stress are important for, but are only two of many factors pertaining to, the development and recurrence of peptic ulcer. Thus, it is better to consider that the addition of *H. pylori* as an important factor in the pathogenesis has expanded the bio-psycho-social scope of peptic ulcer disease, allowing us to expect further elucidation of the pathophysiology and more progress in diagnosis and management.

Multivariate Analysis of Factors Related to Peptic Ulcer

The author and his colleagues performed a multivariate analysis to identify the factors that were most important in relation to the development and recurrence of peptic ulcer. As shown in Fig. 1, smoking, the method of coping with stress, anti-*H. pylori* antibodies, the speed of eating, an ulcerogenic personality, a regular diet, and daily stress were closely associated with the presence or absence of ulcer in this order. The presence or absence of ulcer could be accurately predicted using these factors in 38 (79.2%) out of 48 patients.

A graphical assessment showed that an irregular diet and smoking were most closely associated with recurrence in this order. In the case of association with recurrence, positivity for anti-*H. pylori* antibodies and compliance with therapy were comparable in importance. From the results described above, in addition to *H. pylori* infection, several risk factors are important as etiologic factors, including life-
style, smoking, and behavioral factors such as the mode of coping with stress. The extent of the involvement of these individual factors in the pathogenesis of ulcer cannot be assessed without a new method such as one based on non-elementalism.

**Diagnosis of Peptic Ulcer as a Psychosomatic Disease**

A set of diagnostic criteria for peptic ulcer was drafted depending on the results of the above-mentioned multivariate analysis. According to these criteria, peptic ulcer could be considered a psychosomatic disease in 39 (76.5%) out of 51 patients; a diagnosis of psychosomatic ulcer was established in 13 patients (25.5%) and was suspected in 26 patients (51.0%). Most of the diagnoses agreed with those made by psychosomatic physicians.

Ishikawa et al. previously reported another set of diagnostic criteria. They assessed the value of their criteria by dividing patients into two categories, i.e., those with psychosomatic ulcer and those with suspected psychosomatic ulcer.

Their criteria and ours share many features. According to their criteria, peptic ulcer was psychosomatic in more than 66% of patients, which was a similar rate to that estimated according to our criteria.

There is a problem in relation to the “Human Science” advocated by Carrel that was mentioned at the beginning of this article. The prevalence of psychosomatic ulcer will vary depending on the ability of the physician to understand human nature and the ability of patients to notice their own internal stress. In traditional medicine, peptic ulcer is regarded as a disease caused by infection, stress, or non-steroidal anti-inflammatory drugs. In conventional medical methodology, even lifestyle factors, psychological factors, social factors, and behavioral patterns, all of which vary between individual patients, are separately quantified and expressed numerically to reach a statistical conclusion. This is the present status of the medical approach to peptic ulcer.

Unexpectedly, the patients are often aware of the association of their peptic ulcer with stress. A questionnaire study was performed...
in patients with gastritis, peptic ulcer, and hypertension, who were asked to describe one or more risk factors that were considered to be involved in their disease. The factors that they chose are listed in Fig. 2. Among the patients with gastritis or peptic ulcer, 70.4% considered that their disease was associated with stress. Other factors chosen were those related to lifestyle, which is an item included among the diagnostic criteria described above. Lifestyle is deeply associated with human nature, society, behavior, economic status, and education. In other words, it should be understood that behavior and lifestyle reflect the individual personality and social milieu. 9)

Conclusion

If the natural banks of a river are broken, the breach may be filled with concrete along with reinforcement of the riverbed using concrete and construction of a dam upstream to control the flow of water. Bacterial eradication and the administration of proton pump inhibitors and other drugs in the treatment of ulcer are analogous to civil engineering for river management.

In conventional medical treatment for ulcer, unhealthy lifestyle factors (including smoking, drinking, and stress) are left unchanged. If disease is a signal from the body and mind, even if the signal is removed, the underlying health problems have a high potential to give rise to diabetes, cancer, and other diseases instead of peptic ulcer. A construction project designed to prevent a river from breaking its banks makes the river unable to function as part of the ecosystem, and makes it hard for living things grow and survive in it. In addition, it causes pollution of the sea, and makes the land less fertile, while damaging the fields, forests, and mountains.

Like civil engineering for rivers, the medical management of ulcer should not be based on a simple cause-effect relationship. Treatment should be adjusted to individual patients and should be designed by taking the involvement of many causative factors (including H. pylori and stress) into consideration. In other words, the bio-psycho-social approach is essential for the treatment of peptic ulcer.

REFERENCES


