

an inert substance identical with a drug for patients who complain of pain; the department of anesthesiology confirmed that the pain was relieved in 1/3 of patients and named it the "placebo reaction". Placebo is from the Latin word *placere*, meaning to please or to gratify. Formerly, medical treatment had an aspect of alleviating pain and bringing comfort to a patient. Today people expect that a medical decoction or an extract will have a miraculous action. Medical treatments which may have originally included a religious connotation Medical treatment which may have originally included a religious connotation have a "healing" effect in respond to the of mind, trust and gratification desired by a patient. Even in the age of science, a psychological action which is etched in the perceptions and behavior of people in the long history of mankind, remains in drugs and medical treatment and is reflected in scientific action. Double-blind experiments are used when developing a new drug. This fact itself is tantamount to admitting that medical service has a psychological effect.

Understanding the mechanism of this placebo reaction may lead us to clarification of a desirable patient-physician relationship. I² once conducted a placebo experiment using neurotic patients as the subjects. As shown in Table 1, 37.6% of the patients showed some improvement or complete disappearance of symptoms with the prescribed placebo. The finding from this study led us to recognize the need to elucidate a patient's psychology in taking a drug and psychological meaning of a drug in the context of the patient-physician relationship. At that time, the method of informed consent had not been generally adopted, and I hesitated to tell patients that the study

drug was a placebo. So I told them I wanted to prescribe a "certain drug", and obtained their consent. In the second experiment, the placebo reactors amounted to as much as 50.7% of subjects probably because those in charge of the treatment knew a placebo was prescribed and the placebo reaction could be predicted to some extent. Thereafter, experiments were double-blinded, and the placebo reactors reached a level of 30% on 2 occasions. As described above, the attitude of the physician who prescribes a placebo exerts an influence on the placebo reaction. This influence presents itself as well when a drug with a pharmacologic action is used in actual medical practice. We found an aggravation of old symptoms and the appearance of new symptoms in some patients who had taken a placebo. This is called a placebo toxic reaction. We found in our experiments that 15.6% of subjects had diverse toxic reactions, including nausea, headaches, head cloudiness, feeling of blood rushing to the head, palpitations, abdominal discomfort, drowsiness, abnormal sensation of the skin, stiffness of the neck, dizziness, choking of the throat, anorexia, feeling of oppression in the chest, lightheadedness, stammering, dryness of the mouth, languidness, and absent-mindedness. One patient told me that he did not understand the treatment very well including the drug prescribed or his involuntary behavior showing "his failure to understand it".

Four factors may be help explain why the placebo reactions occur (Table 2).

A patient is concerned with the treatment, and the patient-physician relationship may influence the placebo reaction. These attitudes of patients are closely related to the help-seeking behavior mentioned earlier as proposed by Rado.

For a physician to alleviate a patient's pain and to help patients is historically recognized as self-evident

Table 1. Placebo Reactions (Improvement) of Neurotic Patients

Experiment	No. of cases	Reactors (%)
Open label		
1 st	21 (100%)	37.6
2 nd	132 (100)	50.7
3 rd	68 (100)	36.6
Double blinded		
4 th	90 (100)	33.3
Beecher et al. ¹ report	(100)	35.2

Table 2. Mechanism of the Placebo Reaction

1. Conditioning by the effectiveness of some drugs in previous treatments
2. Symbol of holding and supporting by the physician
3. Suggestion from information given by other patients
4. Introjection of explanations and persuasion by the physician