

Pain

Research and Treatment

Benjamin L. Crue, Jr.

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Further Observations from City of Hope
National Medical Center

EDITED BY

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(内部交流)



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The Present Status of Therapy for Clinical Pain States

B. L. Crue, Jr.

A symposium on pain was held at City of Hope National Medical Center in May, 1969, and the proceedings published in 1970 under the title "Pain and Suffering—Selected Aspects" (1). This present volume is limited entirely to contributors from the City of Hope, and is an attempt to report on some of the work being carried on by various investigators at this pain center during the subsequent 4 years. For the interested reader and the student investigating the problem of pain, there is already an overwhelming symposia literature on the subject. We will mention only a few recent publications that have been written in the English language to introduce the reader to the subject.

Keele's "Anatomies of Pain" published in 1957 (4) gives an interesting historical background on the development of human endeavors in pain treatment and investigation. There have been several recent international symposia devoted to the subject of pain. Two resultant publications are "Pain" edited by Knighton and Dumke, 1966 (5) and "Pain" edited by Soulaire, Cahn and Charpentier, 1968 (11). For the clinician we must mention the following landmark publications: "Pain" by Lewis, 1942 (6); "Pain Mechanisms, A Physiological Interpretation of Causalgia and its Related States" by Livingston, 1944 (7); and the two volumes by White and Sweet "Pain—Its Mechanisms and Neurosurgical Control," 1955 (14) and "Pain and the Neurosurgeon, A Forty Year Experience," 1969 (15). Also "Pain" by Noordenbos in 1959 (9) must not be overlooked.

In the field of neurophysiology we list as important contributions "Receptors and Sensory Perception" by Granit, 1955 (3); "Pain" by Sweet in the Handbook of Physiology, Vol. 1, 1959 (13), and the recent work on "Cutaneous Sensation" by Sinclair, 1967 (10). Of course no listing would be complete without mention of the paper "Pain Mechanisms: A New Theory" published in *Science* by Melzack and Wall (8) that has certainly stimulated many of the recent investigations of the neurophysiology of pain. (However, the present status of the neurophysiological aspects of pain research are reviewed in more detail in Chapter 2 by Carregal.)

Pain should be a very easy subject for any clinician to write about for a number of reasons. The complaint of pain is probably the most common ailment

that brings a patient to the physician. Most physicians are thus well acquainted with the clinical aspects of pain. Furthermore, when writing about pain, it's obvious that everyone in the audience is interested not only as a professional, but as a personal individual. Every human being has experienced pain or discomfort to some degree. The phenomenon of pain is not merely an esoteric disorder that happens to someone else.

On the other hand, pain is also a very difficult subject to write about, for even more reasons. First, the subject is so overwhelming that it is impossible for any one individual, any one volume, or any one symposium, to encompass all aspects of the problem of pain. Second, the mere fact that everyone has to some degree experienced pain himself, leads us all to consider ourselves to some degree to be experts on the subject, and it is impossible to get away from the psychological blocking aspects in communicating information about this emotionally charged subject. A third reason that makes it difficult to communicate about pain, especially between physician and patient, is that both parties are well aware that it is the patient alone who is subjectively experiencing the pain, and this can give rise to all sorts of misunderstandings and resentments in trying to verbalize and communicate about the problem. The fourth and probably the most important reason that we have difficulty in communicating about pain, even among professionals and even between investigators specifically doing research in pain, is because we just do not know what pain is, and as yet have not even been able to provide a satisfactory definition that includes all parameters in all given situations.

It is obvious, however, that, like Lewis (6), some attempt must be made to structure or classify as we proceed, even though we cannot adequately define pain. We can categorize pain as acute or chronic, severe or mild. Patients with chronic pain can be divided into those with benign condition vs. those with malignant neoplasms. The most useful and frequently attempted classification is to make some type of percentage estimate in any given patient as to what portion of the pain is "organic," that is, "real" versus what percentage is "functional overlay," or "psychological." All of these classifications, quite obviously, must be rigidly defined and agreement reached between those attempting to communicate and investigate the problem, or misunderstandings are bound to arise as one tries to compare apples to oranges.

The present writer prefers to group patients with the chief complaint of pain into three broad classifications (2).

1. In medical practice in the classical sense, the complaint of pain is used as a clue to make the diagnosis. Once the diagnosis has been established, appropriate steps are taken to "cure" the pathological condition, and thus alleviate the complaint of pain. An example is a young male who comes in complaining of abdominal pain that started in the umbilical region and then moved to the right lower quadrant.

Physical examination reveals that he is tender over McBurney's point. After hospitalization, the patient undergoes appendectomy. Shortly thereafter, the patient leaves the hospital cured of "appendicitis." We must also realize that this is a cured "pain patient," because it was pain and not appendicitis that the patient complained of when he initially sought medical care. We should like to think that this classical approach to medicine is the one that is taken for the majority of patients complaining of pain that we see. Unfortunately this is not true, especially in the field of neurosurgery. Furthermore, even in cases of uncomplicated straightforward acute pain resulting from organic disease or injury, other aspects, such as psychological conditions and the environment that the patient finds himself in at the time of injury, plays a role. For example, a young male may fracture his clavicle in the first play of the football game but feel no pain until a teammate calls attention to the swollen shoulder in the shower after the game is completed. Attention phenomena and motivating factors can complicate pain even in this classical first group.

2. The second category is the smallest of the three, but is made up of a large percentage of the patients undergoing surgical intervention in any pain clinic where neurosurgical procedures are performed. This is the group of patients with known pathology, but where we are unable to alleviate the pain because with our present state of medical knowledge we are unable to effect a cure. The classical example is the cancer patient, who following unsuccessful attempts at total surgical removal, irradiation, and chemotherapy, is finally referred to the neurosurgeon to make him "more comfortable for the time that he has left." Basically, the neurosurgeon does not attack the primary pathology; but either cuts the telephone line between the site of pathology and consciousness and "trades numbness for pain," or, in a small percentage of cases in which functional overlay is severe and intractable in spite of modern pharmacological tranquilizers and antidepressants, performs some type of affective neurosurgical procedure by means of a direct attack on the brain in the form of psychosurgery, such as stereotaxic cingulotomy.

3. The third category is the largest, and may be thought of as a "wastebasket" group of patients who complain chiefly of pain, but whose suffering is due either to unknown etiology and mechanisms, or to trauma or disease that is considered too minor or to have occurred so long ago that it can no longer be regarded as a valid explanation for their symptoms. These are the "-algia" patients that make up not only the classical neuralgias (including trigeminal neuralgia "tic douloureux", meralgia paresthetica, postherpetic neuralgia, or tabes

dorsalis) but that large group of patients for which we are unable to define a cause, and thus end up treating the symptom of headache or backache in medieval fashion under the term "symptomatic medicine." The symptom of pain becomes a "thing in itself," and we treat the symptom of pain since we cannot treat the underlying etiological problem because we often do not know what it is. It is this interesting and hard to treat, large, and varied third group of patients that has, however, given us most of our insight into pain on a trial-and-error basis as we have observed the results of varied therapy over the years. It has been experience with this group of pain patients that has taught the clinical pain investigator that pain is not a primary sensory modality. On the other hand, the patient himself and the physician, who has not delved deeply into the problem but is responsible for the care of such a patient, are even more apt to have reinforced the concept that pain is indeed a real thing and must be treated as a primary condition when, indeed, this is not the case.

The fact that most neuralgic pains are basically referred to the periphery where they are felt subjectively and are a function of the location and activity of central neurophysiological mechanisms is not only not appreciated by patients, but also is not understood by a great many physicians. For example, most doctors and the majority of patients can accept and understand that after a coronary attack the pain that is experienced down the ulnar aspect of the left arm can be described as "referred," while the actual pathology is in the heart muscle. The vague term of "central overlap" is mentioned and accepted as an explanation that the visceral afferents from the heart enter the cord at the same T1 level as the ulnar nerve input. However, in trying to describe occipital neuralgic headache pain experienced in the back of the head as "referred" pain from a whiplash injury when the damage is minor, and located at the mid- or lower cervical region, is misunderstood not only by most patients and attorneys, but the majority of physicians as well. The literature is replete with references to nonexistent damage or entrapment of the posterior C2 root. Old ideas die hard.

Many details of clinical treatment are mentioned in the subsequent chapters in this book. However, several generalizations can be mentioned at the outset: *First*, the majority of experienced pain surgeons have learned that in the third category of patients, with the rare exception of the "purely organic" primary trigeminal neuralgia, surgical intervention is usually fraught with complications and results in an eventual disappointing outcome. Newer techniques of brainstem stereotaxic surgery or electrical stimulation, of course,