POST-TRAUMATIC HEADACHE*
CHARLES BRENNER, M.D., ARNOLD P. FRIEDMAN, M.D., H. HOUSTON
MERRITT, M.D., AND D. E. DENNY-BROWN, M.B.
The Neurological Unit, Boston City Hospital, and the Department of Neurology,
Harvard Medical School, Boston, Massachusetts
(Received for publication July 27, 1944)

INTRODUCTION

HEADACHE, dizziness, difficulty in concentration, nervousness and
insomnia, are common after-effects of head injury, and the frequent
association of all these symptoms forms the clinical entity described
as the "post-traumatic syndrome." Of this group headache is probably the
most important symptom and may appear singly as well as in combination
with the others.

The incidence of headaches following head injuries varies in the reports
of different observers—Guttmann found it in more than 50 per cent of the
cases; Russell 42 per cent; Penfield 33 per cent, persisting more than six
months in 28 per cent; Rowbotham in 80 per cent, while Knoflach and
Scholl state that mild headaches occur after every head injury. Some of the
discrepancies among the various investigators may be explained by the selec-
tion of the cases studied, complications following injury, variations in length
of follow-up, and type of therapy used.

Considerable difference of opinion exists as to which are the most im-
portant factors in the causation of post-traumatic headaches. Schaller lists headache as a symptom of post-traumatic psychoneurotic state and
not under post-traumatic concussion state (encephalopathy). Woltman feels that such an explanation is unlikely because of the regularity with
which headaches appear. Bremer et al. regard vasomotor instability as an
important factor in post-traumatic headache. Penfield and Norcross state
that meningeal adhesions may be responsible for the headaches. Row-
botham expresses the opinion that many of the symptoms of the post-
concussional syndrome, such as headache and dizziness, have a direct or-
genic basis. One of the authors, discussing the sequelae of war head injury,
emphasized the importance of recognizing both physical and emotional
trauma as associated factors. Attention was called to the occurrence of head-
ache after very mild as well as very severe head injury. Symonds also says
that physiogenic and psychogenic factors are so closely interwoven when there
is organic cerebral damage that a separation between them is unnatural and
the practice of dividing cases of post-concussional syndrome into two groups,
labeling the syndrome organic in one and functional in the other, is un-
profitable and misleading. Lewis is in agreement with Symonds.

In summarizing the views of the various authors it appears that there

* The work described in this paper was done under a contract, recommended by the Committee on
Medical Research, between the Office of Scientific Research and Development and the President and
are essentially three opinions. Some authors relate post-traumatic headache (as well as the other symptoms of the post-traumatic syndrome) exclusively to psychological factors, some exclusively to physiological ones, and some emphasize the importance of both types of factors in the great majority of cases.

As emphasized by one of us it is evident that the complaints of the patient following head injury will vary not only with the manner and degree of injury but with the personality structure of the patient, compensation factors, and his environmental status. The purpose of this investigation was to study the interrelation of such factors with particular reference to the symptom of post-traumatic headache in a group of civilian head injuries admitted to a general hospital.

METHOD

The present report is based on a series of 200 consecutive head injuries admitted to the Boston City Hospital. Selection to some extent was inevitable, for the requirements of the inquiry necessitated that cases be excluded if the essential data on duration of loss of consciousness were lacking because of alcoholic stupor or other unrelated complications. Further, since the main objective of the inquiry was related to disability in healthy persons in regular occupations, the study was limited to age groups between 15 and 55 years and excluded chronic alcoholics and chronic unemployed. The material, selected in these respects, was fairly evenly distributed in the age group 15 to 54, and consisted of 125 males and 75 females of a variety of national stocks (71 predominantly Irish) and occupations (96 skilled or semi-skilled workers).

The patients were first examined as soon as they were brought into the hospital, which in most cases was within a few hours after the accident. They then were followed daily during their hospital stay and at intervals of one to two months for periods of six to fifteen months in the out-patient clinic. On each follow-up visit each patient was seen by a neurologist, psychiatrist, psychometrist, electroencephalographer, and social service worker. Roentgenograms, spinal fluid examinations, electroencephalograms and other laboratory procedures were done when possible during the hospital stay and on some patients in the course of the follow-up. Whenever possible, the following factors concerning the patient were especially noted: type of accident, location of any scalp or skull injury, and extent and location of any brain injury. During the hospital course the following things were ascertained about the headache: its location, type, mode of onset, when first experienced, effect of posture, sleep, mental and physical effort, and lumbar puncture. The associated symptoms and signs were noted, what relieved and what aggravated the headache, the duration and frequency of the attacks, and the affective state of the patient. During convalescence a similar procedure was followed, with further investigation of any previous history of liability to headache and any family history of headaches. In all possible cases examinations of vision, ear, nose, throat, etc. were done to make sure that there were no extraneous factors that might be causing the headache.

RESULTS

Post-traumatic headaches occurring in our patients were characteristically intermittent, lasting usually a few hours, though the duration varied from a few minutes to several days. They were variable in severity and were described by the patients as steady, throbbing, aching, dull, burning, or pressing. They were generalized, sharply localized, or polar (e.g. bifrontal, bioccipital). The most common precipitating factors were sudden change in posture, fatigue or effort, and emotional upsets, though the group