Head injury and its natural sequelae are not necessarily the worst thing, or to put it another way, they are not the only worst thing. New problems develop in people who have had traumatic brain injuries (TBI), sometimes many years down the road. These are clinical problems that can be as debilitating as any consequence of the injury itself, but they may arise after a year, or after several years, or after many years. They are usually insidious in onset, in contrast to the catastrophic arrival of neurological deficit following TBI, so they may be overlooked and thus go untreated.

The delayed neurobehavioral sequelae of TBI are not only the result of exhaustion after years of debilitation and neglect, nor are they the simple accretion of clinical elements that finally emerge above the threshold of detection. They are probably the consequence of unique pathophysiological processes set in motion at the time of injury.

There are five delayed neurobehavioral sequelae of TBI:

1. Affective disorders, especially depression, especially in the first year or two after injury
2. Memory deficits that may arise de novo after about 2 years
3. Posttraumatic epilepsy
4. Posttraumatic psychosis, which seems to arise with similar frequency as posttraumatic epilepsy, and usually within the first 10 years of injury
5. Dementia, which is a long-term proposition.

It appears that TBI increases the risk over basal rates for the general population to this degree: for depression, by a factor of 5 or 10; for seizures, by 2 to 5; for psychotic disorders, by the same factor; and for dementia, by 4 or 5. Severe TBI, or injuries with special characteristics, may increase the risk of delayed sequelae even further.

Other problems arise in TBI patients with the passage of time, but the five listed here are the major clinical neurobehavioral issues. Posttraumatic headache, in contrast, usually begins within the first few days or weeks after TBI, and although Sections of this chapter are scheduled to appear, in substantially modified form, in the journal *Brain Injury* in 1991.

the nature of headache may evolve over time and may well be a long-term problem, it is not usually delayed in onset. The appreciation of sexual dysfunction or of anosmia may not come for many months, or even years after an injury, but that is more a question of detection; the problem was always there, but no one thought to inquire about it, and the patient never related it to the injury. 

It is important to consider the delayed neurobehavioral sequelae of TBI in their own right, because patients deserve to know, and so do their families. Estate planning for severely injured individuals also requires at least some appreciation of long-term risks. Physicians and psychologists should also have these data in hand, for reasons that are obvious.

**Affective Disorders**

More has been written on this topic than any of the others and there is also an extensive literature about depression in association with other neurological disorders, such as stroke, Parkinson’s disease, and multiple sclerosis; useful information, for purposes of contrast and comparison. In fact, the comparison is more pertinent, because depression after TBI is about as common as it is in other severe neurological disorders.

The prevalence and incidence of affective disorders, in general, will naturally be influenced by the diagnostic categories and the diagnostic criteria that are being used at the time, and by the ascertainment criteria and the sampling method of the particular survey. There is no statistic that is universal for any of the affective disorders such as there is for schizophrenia, which occurs at the same rate across the boundaries of continents and appears always to have occurred at the same rate over the years. The frequency of occurrence of the various affective disorders is usually found to vary with sex, race, and culture, and there has even been comment on the effect that the prevalence of affective disorder, especially depression, is increasing in modern times. One may read that 13% or 20% of the general population in this country will have at least one clinically significant depressive episode at some time in their life (Blazer et al., 1988). The number will be much smaller, however, if one refers to the most severe forms of affective illness, like bipolar disorder, affective psychosis, or melancholia (1.9%-3.5%; Blazer et al., 1988).

Affective disorders in general and major affective disorders in particular are clearly associated with significant morbidity, and they are a major public health problem around the world. They also carry significant mortality. *The lifetime risk of suicide may be as high as 15% for patients with major affective disorder* (Black et al., 1987). Depression and related affective disorders also contribute to mortality from other causes such as accidents and natural diseases. The standardized mortality ratio (SMR) is increased in people with depression or anxiety disorders. *The SMR for such patients is 1.5, a 50% increase over the mortality rate of the general population; 2.1 for men, 1.2 for women* (Murphy et al., 1987).

The most recent definitive statement concerning the epidemiology of affective