Neuropsychological disturbances and psychiatric problems are common in multiple sclerosis (MS) [4, 12, 18, 19, 23, 24]. It is difficult to differentiate which of the disturbances are due to organic disease and which are psychological reactions to a disease that is always an enormous psychological burden, with an unpredictable course and a potential to lead to severe disability and handicap.

"Premorbid personality"

Retrospective investigations of patients already affected have repeatedly attempted to characterise a premorbid personality and to determine the personality characteristics which dispose to the disease. Such investigations [21] have claimed that the premorbid personality of MS patients is characterised by hysterical aspects, as notes on “hysteria” are frequently found in case reports of MS patients. In fact, MS may manifest itself in earlier phases of the disease by various symptoms which may be found in hysterical (“histrionic”) personalities: sensory disturbances, emotional instability, and particularly fatigue. If, from such observations, the inference is made that hysterical personality characteristics may dispose to the development of MS, it only discloses a lack of ability to diagnose early manifestations of MS. “In its infancy multiple sclerosis used to be called hysteria” said the famous Queen Square physician Farquhard Buzzard more than 100 years ago. Usually the term “hysteria” is used imprecisely and includes conversion phenomena, dissociations, or only characteristics of individual personalities. Generally it discloses more about the way in which physicians think about their patients than describing clinically relevant data [15].

Cognitive functions

Reports on the frequency of disturbance of cognitive functions in MS patients are very variable and depend on the methods used and on the type of patients examined. In about one-half of patients in whom no mental disturbances are found on routine neurological examination, cognitive deficits may be detected during detailed neuropsychological examination [4, 23]. Discrete or moderate impairment of cognitive functions may be found on neuropsychological testing in 60% of patients with a disease duration of even less than 2 years [17] without leading to disability in daily life. If such impairments are found, it is very likely that they will further de-
The most frequently impaired cognitive function in patients with MS is memory. Patients with MS often show problems involving working-memory tasks, while short-term memory – assessed by memory-span tasks – remains unimpaired. In long-term memory – a relatively unlimited and permanent memory store – impairment is commonly observed if spontaneous and free recall is required. Recognition memory is normal or less impaired than free recall. Some authors consider this special pattern in memory deficits in MS patients as evidence that their encoding of information is unimpaired, but that they have problems in retrieving the stored information [24]. Beatty et al. [1], however, have reported that only 53% of their MS patients exhibited a pattern of memory impairment in which the most marked feature was inconsistent retrieval. Thornton and Raz [29] found in their quantitative review that MS patients show impairments across all memory domains, and that long-term memory dysfunctions are based not only on retrieval deficits. Visuo-spatial processes, motor speed and reaction time, reading aloud and figure copying are also affected in MS patients when compared to normal individuals and patients with other neurological diseases.

MS thus appears to produce a general slowing of cognitive processes [13]. Patients with MS may also have problems in executive functions and planning skills. On specialised tests of abstract or conceptual reasoning such as the Wisconsin Card Sorting Test or the Tower of London, patients with MS show perseveration errors and more problems in profiting from feedback. Patients with MS are more easily distracted from tasks involving learning capabilities and memory, although learning capabilities remain intact in the absence of distraction. Visuo-spatial processes, motor speed and reaction time, reading aloud and figure copying, and memory appear to be more affected than verbal functions compared to normal individuals and to patients with other neurological diseases. MS appears to produce a general slowing of cognitive processes [13] but does not entail a uniform pattern of cognitive deficits. In earlier phases of the disease disturbances of memory are found in a great proportion of MS patients when properly tested, but more discrete disturbances of memory may at least in part be due to depression and are frequently associated with personality changes [11]. MS patients perform as well as controls regarding the accuracy but not the speed of tasks of divided or automatic attention; however, they perform significantly worse on more measures of attention that elicit more effort. Attentional functions should be assessed in detail and treated selectively [22]. Disturbances in learning of verbal and non-verbal material are frequent with longer duration of the disease.

More recent studies in MS are devoted to the investigation of subgroups, for example, primary vs. secondary progressive MS [5, 6] and isolated clinical syndromes suggestive of MS [8]. There is a moderately strong correlation with lesion burden on proton density weighted magnetic resonance imaging and with magnetisation transfer derived measures: overall macroscopic and microscopic brain damage is more important than the corresponding regional brain disease in determining deficits of selective cognitive domains [26]. In primary progressive MS the disease process is more confined to the spinal cord and therefore leads to less cognitive impairment than the secondary progressive form in spite of comparable disability as determined on the Expanded Disability Status Score.

Usually there is no or only a weak correlation between cognitive deficits and the degree of physical disability or the duration of illness or depression. Good et al. [11], however, have suggested that even more discrete disturbances in memory are at least in part due to depression and are frequently associated with personality changes. Cognitive deficits are usually not correlated with anxiety symptoms, but sometimes they are connected with the experience of apathy, indifference and euphoria. Some authors have described correlations between cognitive dysfunctions in MS and the amount and location of white matter disease as determined by magnetic resonance imaging (indices: total cerebral lesion, cerebral metabolism, size of the lateral and third ventricles, size of the corpus callosum) [2, 20].

Cognitive problems have a negative impact on the quality of life. MS patients with impaired cognitive functions are less likely to be working, they are less engaged in social or vocational activities, and they have greater difficulty in performing household tasks. They are more frequently dependent on other persons in activities of daily living than are MS patients without cognitive deficits. A recent study shows that MS patients with impaired autobiographical memory are more content with their quality of life than are unimpaired patients [14].

Early detection of cognitive dysfunctions in MS patients by neuropsychological testing helps to determine the work status of MS patients and to adapt the work settings to their remaining abilities. This should enable a greater proportion of MS patients to keep their jobs. It is also important to inform family members about the relationship between MS and cognitive dysfunctions. Patients’ cognitive problems are often incorrectly attributed to obstinacy or depression. This causes additional stress which should be avoided.

**Affective disorders**

For decades it was taken for granted that the mood of MS patients is typically euphoric, as described by many