Alzheimer’s disease: charting the crossroads between neurology and psychology

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Neurodegenerative disorders such as Alzheimer’s disease (AD) are increasingly recognised to have a long prodromal stage before the onset of symptoms defining the dementia syndrome. This phase may last up to years or even decades. An intensive search has been initiated for signs or symptoms that might enable prediction of dementia development.1 The motivation for identifying such predictors comes from the assumption that disease-modifying treatment might be more effective in early or even presymptomatic stages when the pathogenic mechanisms have not progressed, and irreversible damage to neurons and neural networks is still limited. Therefore, early recognition of imminent dementia may play an important role in the future.

In addition, a definition of dementia that focuses on cognitive symptoms might conceal early non-cognitive symptoms. In fact, we have learned from diverse recent studies that dementia is often preceded by depressive symptoms years before the onset of cognitive decline. It remains unclear, however, whether depression actually represents an early disease symptom, a psychological reaction to cognitive deterioration perceived by the affected individual, or whether it is a true risk factor for dementia development. Likewise, social isolation and the subjective feelings of loneliness have been suggested to be associated with subsequent dementia development.2

Similar to depression, loneliness might be a consequence or a risk factor for cognitive dysfunction, or a combination of both. Diverse ways of how it might worsen a cognitive disorder are conceivable, for example, their impact on lifestyle factors such as social and physical activities, diet or healthcare utilisation. Hence, drawing attention to social isolation and subjective feelings of loneliness has a potential of not only alleviating patients from a psychosocial burden but also possibly preventing or slowing dementia development.

In their study, Holwerda and colleagues compellingly demonstrate that subjective feelings of loneliness, rather than the actual fact of being alone, can be a forerunner of the onset of dementia. Put differently, it appears to be more important how patients intimately experience their specific environments—as opposed to the objective quality of their situation as judged from an external point of view. In this respect, the quality of social interactions matters more than the quantity. In the PAQUID survey,3 the only variables associated with subsequent dementia or the onset of AD were those reflecting the quality of a given social network. Similarly, associations were found with respect to satisfaction and reciprocity in relationships. Here, Holwerda and colleagues draw a fundamental distinction between the actual surroundings of the patients and their subjective feelings of vulnerability. Given the limited number of studies currently available, however, the possible interpretations of these findings are numerous and leave a wide field open for further study.

Certainly, the frontier between neurological and psychological hypotheses would appear extremely narrow: feelings of loneliness despite good social interactions could evoke psychological alterations, such as depression and personality changes, or might be caused by neurodegeneration in neuronal circuits responsible for social functions.

HINTS OF EXECUTIVE DYSFUNCTION?
The paradigm of short-term memory loss as an initial sign of AD is being progressively undermined. Data from the PAQUID survey have notably shown that executive dysfunction could in fact precede memory loss.4 Furthermore, subtle executive dysfunction, which can occur early on in the evolution of AD, is closely linked with impaired activities of daily living, resulting in partial loss of independence.5

Depression and executive dysfunction clearly trigger loss of autonomy. Thus, feelings of loneliness could be a consequence of the—more or less conscious—perception of imminent helplessness when facing routine tasks of daily living. Such apprehensions are often reported by patients before any deficits can be detected using standard tests. In this respect, feelings of loneliness could represent an early sign of executive dysfunction.

PERSONALITY DISORDERS AS RISK FACTORS FOR AD
It is well established that emotions and probably personality can also be altered during the course of AD.6 Neurodegenerative diseases frequently cause focal damage to the brain structures mediating social cognition and personality, resulting in significantly altered interpersonal communication and behaviour.7 Moreover, social cognition, which designates all the cognitive functions contributing to social relationships, tends to be altered early in the development of AD.

Premorbid personality would seem to be an important factor in the emergence of a number of behavioural symptoms in the early stages of the disease.6 8 9 These notably include neuroticism (ie, hypersensitivity towards stress or a negative vision of life). Personality changes during AD have been widely covered in the literature.8 However, the link between the premorbid personality (ie, disorders or traits) and the development of AD has been much less documented to date.

In view of the findings of Holwerda and colleagues, it is tempting to speculate that patients with certain personality structures, for example, dependent-type personality, could run a greater risk of developing cognitive disorders. Once again, however, such a hypothesis could equally be interpreted in terms of an alteration of executive functions. It would, indeed, seem logical that more resourceful patients might be better equipped to adapt to isolation and age-related cognitive deterioration. On the other hand, feelings of social isolation might lead to continuous stress that could affect complex neurotransmission as well as neuronal integrity resulting in cognitive decline. As noted by authors, specific longitudinal studies are needed to assess further the link between personality disorders and cognitive decline.

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