Mental Disorders in Old Age

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INTRODUCTION

Mental disorders are common in old age but frequently remain undetected and untreated. Mental disorders induce functional disability, disturb rehabilitation, burden the health system and impair life-quality of old patients and their relatives. Geriatric patients are characterized by suffering from multiple diseases, being acutely at risk in the case of somatic disorders, for instance to loose functional autonomy (Table 1). Old patients have a great need for both rehabilitation and for psychosocial services (1). Moreover, treatment of mental disorders is decisive to prognosis of other somatic diseases.

Table 1: The geriatric patient.

old multimorbidity at risk in the case of somatic disorder need for rehabilitation need for psychosocial services

A large population-based study in Berlin (Berlin Study of the Aged) determined frequency of medical diagnoses and disabilities as well as prevalence rates of psychiatric morbidity in the elderly. Results from this study indicate that 96 % of people older than 70 years suffer from at least one "severe" medical diagnosis. At an age of more than 85 years functional disabilities increase dramatically, especially in women (Table 2 and 3), (2). Wernicke and collegues (3) reported that distinct psychopathological syndromes occurred in 72.7 % of the elderly, while a clinically defined psychiatric disorder was found in 40.4 %. These figures highlight that a

Ao. Univ. Prof. Dr. Peter Fischer, Department of General Psychiatry, University Hospital of Vienna, AKH, Währinger Gürtel 18-20, A-1090 Vienna. e-mail: peter.fischer@akh-wien.ac.at large number of old patients are in need of treatment, even though a considerable proportion of clinically relevant psychiatric morbidity in the elderly does not meet common diagnostic criteria.

Table 2: Medical diagnoses and frailty in older people (over 70 years) ("Logitudinal Aging Study Berlin").

Medical diagnoses and	l frailty in older peopl	le		
At least one medical diagnosis 5 or more medical diagnoses		100 % 94 %		
At least on "severe" me 5 or more "severe" me	96 % 30 %			
At least one pharmace (prescribed by a m	96 % 92 %			
5 or more pharmaceutic (prescribed by a m	56 % 24 %			
Frailty (shopping witho	34 %			
70 – 84 yrs 85+ yrs	women 27 % 81 %	men 19 % 60 %		
Only 20 % of frailty is explained by mental disorders.				

DEPRESSION

Depressive syndromes are frequent in old age (4, 5) and especially frequent are minor forms of depression like dysthymia, or subsyndromal depression. Although late-life depression is a chronic and disabling illness, there is a common misconception that it is a normal feature of aging. Depression at old age is therefore under-recognized and severely under-treated, especially in very old age with high somatic comorbidity. The obsolet distinction between reactive depression on one hand and endogenous depression on the other hand is one major source of this undertreatment.

Depressive syndroms in the elderly, even more than in younger patients, impair functioning, reduce life-quality and induce somatic complaints (6). Poor physical health has long been recognized to be one of the most

Table 3: Mental disorders in old people (over 70 years) (except sleep disorders, except somatoform disorders) (2).

Mental disorders in old people	
Dementia	14 %
Mild cognitive impairment	?? %
Depression	9 %
Subsyndromal depression	16 %
Panic disorder	2 %
Generalized anxiety disorder	12 %
Social phobia	5 %
Addiction	2 %
At least one mental disorder	34 %

important risk factors for depression in older adults. Beside comorbid organic syndromes, personal history of depression, death of spouse, health related factors and anxiety disorders show significant associations with incidence of depression (7). Depression in old age is causally associated with somatic disorders and stress due to the patients' perception of diseases which are serious, life threatening, painful, chronic, untreatable or disabling. Some somatic diseases are associated with particularly high probabilities for the patients to suffer from depression. Cardial insufficiency, diabetes, stroke, or Parkinson's disease are strongly associated with depressive disorder. Other diseases with high depressive comorbidity are Alzheimer dementia, coronary heart disease, cancer, and primary chronic polyarthritis. Since many aspects of physical health can be targeted for improvement in primary care, it is important to know that physical health problems are a predictor of both the onset and the persistence of depression (8). A recent study with a complex epidemiological design, part of the "Amsterdam Aging Study", has proven that depression in old age follows physical health problems in most cases. Persistant physical health problems are also strong predictors of chronicity of depression. Depression is enormously frequent in hospitals or chronic care units. More than 80 % of the patients at the Geriatric Care Hospital "Pflegeheim Lainz" – now called "Geriatric Center Wienerwald" suffered from pervasive depression in 1986.

The treatment of depression in old age is at least as effective as it is in

the younger patient. Antidepressants are as effective in acute treatment in older, as in younger, depressed adults. Maintenance antidepressant therapy also appears as effective in older patients. Modern antidepressive agents such as the selective serotonin re-uptake inhibitors (SSRIs) have a favorable safety and tolerability profiles, making them a suitable treatment option for older patients, who are more vulnerable to adverse effects (9). Organization of treatment of depression in old age would largely improve life quality of both patients and care-givers, but it would also save lives by preventing suicides.

ANXIETY DISORDERS

Anxiety disorders are common in later life and may burden the public health system even stronger than depressive disorders (10). Diagnostic criteria for anxiety disorders only work in young patients. The hierarchical rules of these criteria allow a diagnosis of anxiety disorder only in somatically healthy people. When anxiety disorders are diagnosed in the elderly, there is a relatively high probability of comorbid conditions being present (11). Van Balkom et al. (12) found that major depression, benzodiazepine use, and chronic somatic diseases were significantly more prevalent in old people with anxiety disorder. Women do have a higher prevalence of anxiety disorders than men but this difference diminishes with increasing age, as does the apparent prevalence of all anxiety disorders apart from generalized anxiety (13).

Especially "Generalized Anxiety Disorder", possibly a pre-stage of depressive illness in many old patients, is very frequently found in medical institutions. In The Longitudinal Aging Study Amsterdam (14), which was based on a random sample of 3107 older adults, the overall prevalence of anxiety disorders was estimated at 10.2 %. Generalized anxiety disorder was the most common disorder (7.3 %), followed by phobic disorders (3.1 %), whereas panic disorder (1.0 %) and obsessive compulsive disorder (0.6 %) were rare. These data are in line with previous findings. Vulnerability factors such as female sex, lower education level, traumatic experiences during world war I and II, stresses commonly experienced by older adults (recent losses of familiy members and chronic somatic illness), and a smaller size of the social network appeared to be associated with anxiety disorders. When detailed psychiatric examinations of old patients were performed in a surgical outpatient clinic in London (15), 36 % of the old patients fulfilled the criteria of General-

ized Anxiety Disorder, which usually implies a massive loss of life quality.

As Forsell and Winblad (16)pointed out in a large study including 966 persons aged 78 years and older, old anxiety patients are particularly frequent users of medical institutions. They also reported that anxiety disorders and depression are seriously undertreated in the elderly. Only 16 % of old patients with depressive disorder and 8 % of old patients with anxiety disorder received the recommended pharmacological treatment, none of the patients was offered psychotherapy. Most cases of anxiety disorders in late life are undetected and, when treatment is given, benzodiazepines are overused to the detritment of antidepressants. The high rate of comorbidity between late-onset generalized anxiety disorder and depression in old age suggests that antidepressant medication should be the treatment of choice (17). Treatment of both anxiety disorders and depression will save a lot of costs, since these patients very often present at different medical services, a phenomenon called "doctor shopping" (18).

DEMENTIA

Chronic organic mental disorders, nowadays called dementias, are the main reason for the necessity of geriatric care units. Dementia is defined as a syndrome of acquired impairment of memory and other cognitive functions secondary to structural brain damage (Table 4). The relative frequency of dementing disorder depends on age of the investigated cohort. We investigated the clinico-pathological correlations in Vienna in a large series of autopsies of 675 cases with a mean age at death of 79.5 years. Patients died at a general hospital, a gerontopsychiatric hospital, and a chronic care hospital. 75 % of dementias were found with pure or combined Alzheimer's pathology (19). The clinical differentiation between Alzheimer dementia and vascular dementia was made using the Ischemic Scale of Hachinski. Our clinico-pathological validation of this scale led to a large prospective meta-analysis of the Hachinski Ischemic Scale, which is a device in the diagnosis of vascular dementia used world-wide (20).

A.Development of multiple cognitive deficits manifested by both:

- 1. memory impairment,
- 2. one ore more of the following disturbances: a) aphasia, b) apraxia, c) agnosia, d) disturbances in executive functioning (i.e. planning, organizing, sequencing, abstracting).
- B. Cognitive impairments cause significant impairment in social or occupational functioning.
- C. The course is characterized by gradual onset and continuing cognitive decline.
- D.The cognitive deficits are not due to: a) other CNS conditions that cause progressive cognitive deficits, b) systemic conditions that are known to cause dementia, or c) substance-induced conditions.
- E. The deficits do not occur exclusively during the course of a delirium.
- F. The disturbance is not better accounted for by another Axis I disorder.

There is an expected increase in demented patients in Austria well as in all of Europe (21, 22). The very old are increasing most dramatically with not only the prevalence but also the incidence of Alzheimer dementia increasing exponentially with advancing age. The older the population, the higher the percentage of dementias associated with pathology of Alzheimer's type (23). A study of the European Community found an age-associated prevalence of dementia in Europe. Rates of dementia double every 5 years, which makes the relation an exponential one (24). Alzheimer's dementia has a lot to do with physiological aging processes (25), as can be concluded from the exponential increase of incidence with advancing age. A certain degree of loss of memory is a statistically normal phenomenon in every aging individual. The question remains why some people suffer from dementia during their life. As mentioned above, age enters every mathematical model of Alzheimer's dementia as agesquared. Research has focussed on identifying other risk factors as well as protective factors, that may influence the time of onset of cognitive decline and the speed of its progression. Genetic factors play a major role in the rare pre-senile cases, with onset before the age of 65 (26). Moreover, risk factors include a variety of somatic, demographic, and life-style factors (Table 5).

Table 5: Risk factors of Alzheimer's disease

Definite risk factors

AGE

positive family history of dementia

Down's syndrome

Possible risk factors

Cerebral comorbidity

history of head trauma history of epilepsy

history of cerebrovascular accidents

high LDL cholesterol low HDL-cholesterol

diabetes mellitus

cerebrovascular artherosclerosis

history of high blood pressure

high homocystein levels

Parkinson's disease

alcoholism

Demographic and psychological variables

low social class high number of siblings childhood rural (non-urban) residence

female gender

never been married

physical inactivity

history of episodic depression

low self-esteem?

undesired job?

dominant spouse?

Somatic comorbidity

thyroid disease osteoporosis

 $low\ vitamin\ B_{12}$

low folate

history of herpes simplex

malnutrition

age-related maculopathy low serum DHEA-S

genetic polymorphisms:

APOE e4, ...

Cerebral understimulation

hearing impairment mental inactivity low intelligence low education

Every known cause of cerebral comorbidity in old age has also been described as a risk factor of Alzheimer's disease in epidemiological case-control studies. Not only history of head traumas or cerebrovascular accidents, but nearly all proven risk factors of stroke are also risk factors

of Alzheimer's dementia. Epidemiologic studies also show strong interrelations between brain aging and somatic comorbidity or treatment of somatic comorbidity. Some somatic diseases and the non-exposure to several drugs frequently used in internal medicine, are possible risk factors for the onset of Alzheimer dementia. The regular intake of H2receptor antagonists, non-steroidal antiinflammatory drugs, or cholesterol lowering drugs decrease the individual risk of getting Alzheimer dementia. A patient's history of episodic depression has also been associated with an increased probability to develop Alzheimer dementia (27), as well as several factors leading to an understimulation of the aging brain such as low education (especially illiteracy), mental inactivity, and physical inactivity. In the Vienna Study on Dementia at the geriatric hospital Lainz between 1986 and 1996 we found a quicker cognitive decline in Alzheimer patients who also suffered from hearing impairment as measured in pure tone audiometry (28). Alzheimer's disease may therefore represent a common pathway of overall functional loss of the aging brain, resulting in synapse loss (29).

A main goal of psychiatric gerontology is to develop strategies for the very early detection of Alzheimer's disease. Dementias are partly treatable but need early diagnosis to improve life-quality of the patient and to save costs for the community health system (30). Dementia is usually diagnosed at the stage of moderate dementia, but could be treated about 4 to 5 years earlier. An early pharmacological intervention with modern cholinesterase-inhibitors could save on an average 14 months of progression of the disease. As we know from the excellent work of Braak and collegues (31), Alzheimer changes in nerve cells start in a defined small region of the limbic system (32). This region, the transentorhinal and entorhinal region, is a main junction of the brain between neocortical (cognitive) areas and limbic (memory) areas. Later, the disease spreads to other areas of the limbic system and to association-areas of the neocortex. An important question remaining is whether memory tests or imaging techniques, directed towards these anatomical regions, are the optimal procedures to diagnose Alzheimer dementia in the subclinical phase. In a large gerontological cohort study on prevention of dementia, the VITA (Vienna Transdanube Aging) Study, currently running at the Ludwig Boltzmann Institute for Aging Research of the Danube Hospital in Vienna, we will use imaging techniques like Magnetic Resonance Imaging (MRI) and projected Positron Emission Tomography (PET) to detect possible early changes in the entorhinal region. Beside the assessment of genetic, somatic, and psychosocial risk factors of dementia, we will also evaluate the predictive value of several short memory tests, in order to develop useful tools for the detection of very early states of Alzheimer's dementia in every day general practice.

DEPRESSION AND ALZHEIMER'S DISEASE

The clinical interface of depression and dementia is a rich and complex topic (33). Depressive disorders often cause cognitive symptoms (34). The term "depressive pseudodementia" is used to describe substantial but reversible cognitive impairment caused by an episode of major depression (35, 36). Old depressive patients who complain about cognitive disturbances are at particular risk of being labelled as demented. On the other hand, depression may also occur in the preclinical phase of Alzheimer's disease, probably as a prodrome of the underlying pathobiology of the disorder (27, 33, 37, 38). The overlap of signs and symptoms between Alzheimer's disease and major depressive disorder (e. g. apathy, loss of interest, psychomotor disturbances, difficulties in thinking and concentrating) may therefore complicate diagnosis in the elderly. There is also strong evidence that depressive symptoms are common in Alzheimer's disease (39), but reported prevalence rates show a broad range due to methodological problems in the assessment of depressive symptoms in the course of Alzheimer dementia. Adding credibility to the existence of depressive syndromes complicating Alzheimer's disease, is the consistent finding of a relationship between degenerative changes in aminergic brain stem nuclei and antemortem depression in Alzheimer patients (38, 40, 41). Moreover, depression may be a risk factor for the ultimate expression of Alzheimer's disease (42, 43). Latelife depression is associated with an increase of activity of the hypothalamic-pituitary-adrenal axis (44), exposing the aging brain to elevated glucocorticoid levels. The latter have shown to lower the threshold for age-associated degeneration of hippocampal neurons in animal studies (45). Whether this neuroendocrine mechanism accounts for a higher risk for the development of Alzheimer dementia in humans, remains speculative. Recent studies have demonstrated an association between high plasma cortisol concentrations and cognitive decline in nondemented older individuals (46). However, the possible neurotoxic effect of hypercortisolemia associated with late-life depression provides further rationale for the sufficient treatment of depression in the elderly.

DELIRIUM

Compared to research on chronic organic brain syndromes like dementia, the field of acute organic brain syndromes is still greatly underinvestigated. Acute confusional states, nowadays synonymously called delirium, are frequent and dangerous events in elderly hospitalized patients. Acute confusional states increase mortality and impair long-term outcome of primary illnesses (47, 48, 49, 50). Moreover, they are associated with substantial additional costs due to increased need for nursing home placement, home health care, and rehabilization services.

Table 6: DSM IV criteria of delirium (acute confusional state).

- A.Disturbance of consciousness (i.e. reduced clarity of awareness of the environment) with reduced ability to focus, sustain or shift attention.
- B. Changes in cognition (such as memory deficits, disorientation, language disturbance) or development of perceptual disturbance that is not better accounted for by preexisting, established, or evolving dementia.
- C. The disturbance develops over a short period of time (usually hours to days) and tends to fluctuate during the course of the day.
- D.There is evidence from the history, physical examination, or laboratory findings that the disturbance is caused by an organic factor.

The onset of delirium is characteristically rapid, typical symptoms include abnormalties of memory, orientation, and attention with an inability to focus and maintain attention and alertness (51, 52, 53) (Table 6). Etiology of delirium is multifactorial, resulting from the interaction of baseline patient vulnerability (i. e. the presence of predisposing conditions such as advanced age, prior cognitive impairment, underlying comorbidity, hearing or vision impairment) and precipiting factors or hospital-related noxious insults (e. g. certain medications, anesthetic and surgical procedures, IUC-stay) (54) (Table 7). The identification of baseline characteristics that indicate a particular vulnerability to delirium could be the basis for behavioral or pharmacological interventions to prevent delirium or to treat it, at least, in the very beginning. Among the causative factors of delirium psychoactive medications are of particular relevance. This is best known as a side effect of anticholinergics, but can also be observed following dopaminergic, noradrenergic or serotonergic medications (55, 56, 57).

Table 7: Risk factors of delirium.

Definite risk factors

AGE

high medical comorbidity acute structural or functional brain lesions cognitive impairment or dementia

Possible risk factors		
Somatic	Social/demographic	Mental
poor vision	depression	education
poor hearing	anxiety	male gender
low serum albumin	alcoholism	living alone
low hemoglobin	benzodiazepines	abroad
malnutrition	pain	
kidney or lung trouble		
high BUN/Creatinin ratio		
(dehydration)		

Precipiting factors

surgery, re-surgery	blood loss
duration and type of anesthesia	hypoxemia
abnormal electrolytes	hypotension
abnormal blood glucose levels	dehydration
respiratory complications	infection
use of anticholinergic drugs	proteinuria
use of certain psychotropic drugs	use of morphine derivates
(e. g. benzodiazepines)	physical restraints
urethral catheter	immobility
other	•

Data concerning the prevalence of delirium on surgical or on internal wards show great variance (58, 59, 60). One large study which simultaneously diagnosed dementia and delirium described acute confusional states in 15 % of patients older than 55 years at an internal ward. Only 25 % of these patients also suffered from dementia (61). Rates of post-operative confusional states following elective surgery are smaller if preventive strategies are used. Several studies have focussed on multicomponent intervention strategies for the prevention of delirium and found

that intervention resulted in a lower incidence, less severe symptomatology, and shorter duration of delirium, suggesting that primary intervention may be the most effective treatment (62, 63). In a prospective study at the department of orthopaedy of the Vienna University Hospital we found postoperative delirium in 10% of elderly patients after elective hip surgery (64). A comparable study, financed by the Austrian Science Foundation is currently running as cooperation between the departments for psychiatry, orthopaedy and anesthesiology of the University Hospital.

SUMMARY

Mental disorders in old age are frequent and they are frequently underdiagnosed. Most mental disorders are treatable once detected. Untreated mental disorders strongly impair life quality of patients and care-givers, cost money, promote further disability and burden for the public health system (Table 8). There is a strong and complex interrelationship between somatic illnesses, mental disorders and social factors in old age, which make geriatric medicine more time-consuming and more expensive than normal internal medicine. Mental health is of tremendous importance for functional independence and life-quality. Since it is impossible not to have any somatic diseases in old age, it is essential to develop strategies to cope with these impairments, which in turn strongly depend on mental, that is on both emotional, and cognitive health (65). Thus, mental health is the basis of remaining autonomy and life quality in old age. Beside curing a patient, assurement of life-quality of the multimorbid old patients should be the main goal of medical gerontology. Not only internal medicine, but also a great array of medical disciplines will have to cooperate to reach this objective. In conclusion, there is a need for more education of physicians concerning the common mental disorders in the elderly in order to improve their management.

Table 8: Mental disorders in old age.

frequent frequently not diagnosed impair life quality promote further disability strong interrelations with somatic diseases respond to treatment

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