



Comprehensive geriatric assessment

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Summary Geriatric assessment is a multidimensional and interdisciplinarily deployed diagnostic process to evaluate functional capacities and impairments in geriatric patients. The results of geriatric assessment are the basis for planning of therapeutic interventions in the multidisciplinary geriatrics team. Geriatric assessment adds essential information to the state-of-the-art diagnostic tests, such as physical examination, laboratory tests, or imaging techniques, to acquire a holistic picture about health and functional problems and needs of geriatric patients. Studies have demonstrated that geriatric assessment and the following geriatric treatment improves prognosis and increases the chance of older patients remaining in their own home after discharge from hospital after admission for an acute disease.

Keywords Geriatrics · Functional assessment · Functional impairment · Geriatric patient · Frailty

Umfassendes geriatrisches Assessment

Zusammenfassung Das geriatrische Assessment ist ein multidimensionaler und interdisziplinärer diagnostischer Prozess, um die funktionellen Fähigkeiten und Defizite von geriatrischen Patienten zu evaluieren. Die Testergebnisse des geriatrischen Assessments sind die Grundlage für die Planung therapeutischer Maßnahmen im multidisziplinären geriatrischen Team. Das geriatrische Assessment ergänzt wesentliche Informationen zu den State-of-

the-Art-Untersuchungen, wie körperlicher Untersuchung, Labortests und bildgebenden Verfahren, um ein ganzheitliches Bild über den gesundheitlichen und funktionellen Status geriatrischer Patienten zu erhalten. Studien haben gezeigt, dass das geriatrische Assessment und die darauf aufbauenden therapeutischen Interventionen die Prognose und die Chance geriatrischer Patienten, weiterhin im häuslichen Bereich leben zu können, nach akuten Erkrankungen verbessern können.

Schlüsselwörter Geriatrie · Funktionsdiagnostik · Funktionelle Einschränkungen · Geriatrischer Patient · Gebrechlichkeit

Introduction

Higher age is a major risk factor for the development of chronic illness and functional impairment in activities of daily life. The co-presence of multiple chronic health problems is highly prevalent in persons of older age [1, 2]. In addition to the presence of chronic medical conditions, older persons are frequently affected by impairment of physical, cognitive, and social functioning.

In the case of acute illness, geriatric patients are at a higher risk for complications, further loss of functional abilities, long-term care dependency, institutionalization, and death [3]. Therefore, for planning preventive and therapeutic interventions in geriatric patients, it is essential to assess the health and functional status of these patients in a comprehensive multidimensional diagnostic procedure—the geriatric assessment.

Marjory Warren, a pioneer of geriatric medicine in Britain, was the first to develop an early assessment and classification system for chronically ill individuals according to their capacities and deficiencies in mo-

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bility, mental function, and continence [4]. In 1984, Laurence Rubenstein and colleagues showed in a controlled randomized trial for frail older patients admitted to a geriatric evaluation unit at 1 year a significantly decreased risk for living in a nursing home, less days of stay in acute hospitals, less readmissions to acute hospitals, and a lower mortality in comparison to controls [5]. Further development of assessment tools for physical, mental, and social domains have today made the geriatric assessment the central diagnostic instrument to evaluate functional capacities and to plan geriatric interventions. The effectiveness of comprehensive geriatric assessment in evaluating physical, cognitive, and social deficiencies and in planning individualized geriatric treatment was demonstrated in a large Cochrane Review published by Graham Ellis and colleagues in 2017 [6]. This systematic review including 29 trials with 13,766 older patients admitted to hospital showed that performing comprehensive geriatric assessment increases the chance of patients being alive and living at their own home even 1 year after discharge from hospital. Today, geriatric assessment is a standard diagnostic procedure in geriatric medicine to get a systematic and objective overview of measurable parameters of functional capacities and deficiencies of a geriatric patient and to monitor the effects of specifically geriatric therapeutic interventions. Comprehensive geriatric assessment is not a substitute for state-of-the-art medical diagnostic examinations such as physical examination, laboratory tests, or imaging techniques like ultrasound or x-ray. Geriatric assessment is a complementary diagnostic procedure performed in addition to these diagnostic examinations and tests.

In this article, an overview on indications, domains, and instruments of geriatric assessment is presented.

Selection of patients for geriatric assessment

To select those patients who should undergo comprehensive geriatric assessment, a short and easily applicable screening test should be performed as a first diagnostic step to detect signs of functional disabilities. Only the patients who show signs of impairment in daily life functions in the screening test will benefit from the assessment process and further geriatric treatment planning. In the primary care setting the screening test described by Lachs and colleagues is widely used for that purpose [7]. Screening by Lachs provides a brief 15-item examination of the functional status of older individuals and shows very quickly whether there are impairments in daily life functioning for which further assessments are demanded.

The Identification of Seniors at Risk (ISAR) tool is a screening test designed especially for the emergency department setting, where decisions about optimal allocation of patients have to be made very rapidly and

with minimal consumption of time resources for the clinical staff [8].

Domains and tools of geriatric assessment

Geriatric assessment is a multidimensional diagnostic process which includes the evaluation of physical, cognitive, psychological, and social domains of functions in daily life. Due to the broad spectrum of functions tested in this comprehensive process, different professionals are involved in it, such as physicians, nurses, physiotherapists, dietologists, psychologists, occupational therapists, and logopedists.

Functional status in activities of daily life

One major goal of geriatric therapy is to improve and maintain the capacity of patients to fulfil their activities of daily life and to reach or keep a functional status to be able to live in their home with a minimum of care and assistance. Therefore, assessment of the global functional status in daily life activities is one of the most important and relevant issues of geriatric assessment. Several assessment tools are in use for this purpose. The following tools are used very frequently and have become part of the common language between geriatricians to communicate the functional status of geriatric patients:

- Barthel Index [9, 10]
- Functional Independence Measure (FIM) [11]
- Instrumental Activities of daily life (IADL) [12]
- Timed Test of Money Counting [13]

Barthel Index is the best-established assessment scale in geriatrics to measure a person's performance in daily activities. Use of the Barthel Index is widespread in acute and long-term geriatrics and addresses the issues of feeding, transfer, grooming, toilet use, mobility, dressing, using stairs, bathing, and bowel and urinary continence. Instead of the Barthel Index, another tool—the Functional Independence Measure Scale (FIM)—is applied by a smaller number of geriatricians to assess the performance in activities of daily life.

In addition to the assessment by Barthel Index or FIM scale, a more detailed picture of a patient's functional status in daily life can be achieved by assessment of the instrumental activities of daily life (IADL). IADL assessment tools address items such as using the telephone, shopping, cooking, housekeeping, dealing with money, and using means of transportation.

Mobility and falls risk

To detect problems in mobility it is important to take a patient's history, as in all areas of a comprehensive geriatric assessment. This history must include questions concerning existing gait problems, pain in the musculoskeletal system, falls, and vertigo.

There are several different assessment tools for evaluating mobility, gait speed, and risk of falls in geriatric medicine. The following tests are widely used in Austrian departments of acute geriatrics:

- Timed Up and Go Test (TUG) [14]
- Esslinger Transfer Scale [15]
- Performance-Oriented Assessment of Mobility [16]

Important is the observation of the patient's gait and mobility also outside of the test setting, for example when walking into the physician's office.

Falls in persons of higher age are associated with an increased risk of morbidity, mortality, and the necessity of long-term care [17]. Beside physical tests such as the Performance-Oriented Assessment of Mobility, assessment of risk factors for falls has to also include vision, neurological impairments, and a medication review.

Nutrition and swallowing

Adequate nutrition is an important element for a healthy ageing process. In geriatric populations malnutrition is associated with sarcopenia, reduced muscle function, impaired functional status, osteopenia, decreased wound healing function, and higher mortality [18]. The etiology of malnutrition in older adults is complex and includes factors such as deterioration of taste, diminishing appetite, teeth problems, side effects of medication, and polypharmacy. Due to the fatal chain of problems caused by malnutrition and consequently loss of muscle mass and function, it is crucial to detect risks and signs of malnutrition early. For this purpose, the short form of the Mini Nutritional Assessment (MNA[®]) can be used [19, 20]. This pretest includes the following items: decline of food intake during past 3 months, weight loss, mobility, psychological stress and acute illness, neuropsychological problems, and body mass index. In case of 11 points or less from a total of 14 points in the pretest, nutritional assessment should be continued by the long form of MNA[®].

Disorders of swallowing function are common in frail older persons and can be the reason that patients avoid eating, become malnourished, and lose weight and muscle mass. Studies show a prevalence of oropharyngeal dysphagia in home-dwelling older persons of between 30 and 40% and a prevalence in institutionalized geriatric patients of 60% [21]. The most dangerous effect of dysphagia is recurrent aspiration pneumonia.

As screening test for dysphagia, the dysphagia assessment described by Daniels can be applied by physicians and logopedists [22].

Cognition and mood

For detection of cognitive impairment, several diagnostic tools are available.

The Mini Mental State Evaluation (MMSE) is the assessment instrument for cognitive function which is most used in geriatrics [23, 24]. Cognitive impairment in older persons can be triggered by a variety of causes, such as dementia. MMSE testing can be used for detection and quantification of cognitive impairment, but it does not give information about etiopathogenetic causes of this functional state of cognition.

Examples of assessment tools used for evaluating cognitive functioning of geriatric patients are:

- Mini Mental State Evaluation (MMSE) [23]
- Clock drawing test by Shulman [25]
- Clock drawing test by Sunderland [26]

Acute cognitive or behavioral impairment can be a symptom of delirium, which itself can be a consequence of many different mechanisms. Frequently used assessment instruments to screen for signs of delirium are the following tools:

- Delirium Observation Screening Scale (DOSS) [27]
- Confusion Assessment Method (CAM) [28]

The prevalence of depressive episodes in home-dwelling older persons is described in studies between 8 and 16% [29]. A widely established instrument for assessment of signs of depression is the Geriatric Depression Scale (GDS) [30]. The GDS is a self-assessment tool; a short form can be used for a rapid screening for signs of depression [31].

Social and environmental issues

The quality of life of older persons depends strongly on their social and economic situation. An important part of the geriatric assessment is therefore the evaluation of parameters describing social involvement and the support network around an older person. The main question is who of the personal network of family, neighbors, and friends can help to what extent if the older person needs support and care. To remain living at home at higher age, a private social support network or the employment of mobile care services are important factors.

Conflict of interest W. Schippinger declares that he has no competing interests.

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