

DOI: 10.15225/PNN.2017.6.3.6

Assessment of Mental State — Selected Measuring Tools in Neurogeriatrics

Ocena stanu umysłowego — wybrane narzędzia pomiarowe w neurogeriatrii

Monika Biercewicz¹, Wiesław Fidecki², Mariusz Wysokiński², Beata Haor³,
Mariola Głowacka⁴, Kornelia Kędziora-Kornatowska¹

¹Clinic of Geriatrics, Collegium Medicum, Nicolaus Copernicus University, Toruń, Poland

²Chair of Nursing Development, Medical University, Lublin, Poland

³Faculty of Health Science, The State School of Higher Professional Education in Włocławek, Poland

⁴Institute of Health Sciences, The State School of Higher Professional Education in Płock, Poland

Abstract

Complete Cerebral Assessment (CGA) involves the assessment of a neurological patient in four basic areas where performance capacity, physical health, mental health, as well social and environmental factors are taken into account. Specially prepared research tools (scales, questionnaires) can be used to assess individual CGA components, which significantly facilitate it and influence its credibility. In addition, they allow to verify changes in patient's condition over time, in the category of improvement or deterioration, and also help in the exchange of quantitative (clinical) information between health care providers. Based on the literature, there have been discussed the most frequently applied scales used to assess the mental state of neurogeriatric patients. There have been presented data of metrics such as Mini-Mental State Examination (MMSE), Abbreviated Mental Test Score (AMTS), Clock Drawing Test (CDT), Geriatric Depression Scale (GDS), Hamilton Depression Rating Scale (HDRS), and Beck Depression Inventory (BDI). (JNPN 2017;6(3):130–133)

Key Words: mental condition assessment, scales, Geriatric Neurology

Streszczenie

Przeprowadzenie Całościowej Oceny Geriatrycznej (CGA) obejmuje ocenę pacjenta neurologicznego w czterech podstawowych dziedzinach, gdzie pod uwagę bierze się przede wszystkim: wydolność czynnościową, zdrowie fizyczne, zdrowie psychiczne oraz czynniki socjalno-środowiskowe. Do oceny poszczególnych składowych CGA można użyć specjalnie przygotowanych narzędzi badawczych (skal, kwestionariuszy), które znacznie ją ułatwiają i wpływają na jej wiarygodność. Ponadto pozwalają na weryfikację zmian stanu pacjenta w czasie, w kategorii poprawy lub pogorszenia, a także pomagają w wymianie informacji ilościowej (o znaczeniu klinicznym) pomiędzy osobami świadczącymi usługi z zakresu opieki zdrowotnej. W oparciu o piśmiennictwo omówione zostały najczęściej używane skale w ocenie stanu umysłowego pacjentów neurogeriatrycznych. Przedstawiono dane dotyczące takich skal pomiarowych, jak: Mini-Mental State Examination (MMSE), Abbreviated Mental Test Score (AMTS), Clock Drawing Test (CDT), Geriatric Depression Scale (GDS), Hamilton Depression Rating Scale (HDRS) i Beck Depression Inventory (BDI). (PNN 2017;6(3):130–133)

Słowa kluczowe: ocena stanu umysłowego, skale, neurogeriatria

Introduction

In the assessment of mental health condition both the emotional state and cognitive functions (mental ability) of the elderly are taken into consideration. In order to accurately determine the quality of cognitive

abilities, memory, thinking ability, understanding, planning, counting, writing, recognizing, or abstract thinking are primarily examined. With regard to emotional condition, an important part of the assessment is the study of the occurrence of depression (one of the so-called big geriatric problems) or of states of anxiety.

Mental health is just as important for maintaining an adequate level of functional fitness as physical health. These two components complement mutually affecting each other and therefore cannot be ignored in the case of a comprehensive geriatric assessment (CGA).

The relationships between age-related changes in the central nervous system and the level of intellectual function have not been established yet and such correlations are more closely observed in neurodegenerative diseases. Some cognitive functions do not change with age, whereas others deteriorate. Although at an advanced age separating physiological aging from the onset of pathology may sometimes result in some difficulties, the overall intellectual efficiency of those without neurological diseases is maintained even to the 9th decade of life. It should be added, however, that intellectual activities take up more time due to the process of their slower processing [1,2].

Depression, feelings of sadness, anhedonia (loss of experiencing pleasure) and consequently depression is a fairly common phenomenon observed in old age and in neurological disorders. This is particularly favoured by the situation an older person is in — new and often difficult situations arise in the life which are associated with a spouse's loss, loneliness, growing morbidity, and social and family roles previously performed are subject to changes. Mood is also deteriorated by economic problems and lack of social support. Data from a study on depression in the elderly indicate that this is a common problem and that in the case of people aged over 65 and it affects 9–18% of the population over 65 years of age, with a significant increase of up to 30% for older people living in residential homes [3].

Both lowering of mood (depression) as well as cognitive functions decline (dementia) can significantly affect daily functioning. They are one of the most important factors in the deterioration of self-independence and limitation of functional capacity in ADL and IADL in addition to advanced age, female gender, co-morbidity, level of physical activity and social factors [4–7].

Scales of mental state assessment — aim at determining the occurrence and progression of cognitive disorders and emotional condition. These include also scales of quantitative cognitive functioning assessments (mental capacity), scales which differentiate types of dementia as well as scales assessing affect, anxiety or depression.

Review

The MMSE (Mini-Mental State Examination) scale is used for preliminary, indicative assessment of cognitive function [8]. The assessment covers, among others

orientation in time and place, word memory, attention, linguistic functions as well as visual-spatial analysis. According to the authors of the scale, the score below 24 points suggests the presence of dementia and indicates the need for further diagnostic tests to confirm or exclude this suspicion. In clinical practice, corrected MMSE result should be applied, the diagnostic value of which is significantly higher than that of the “raw” score [9,10].

Hodkinson's Abbreviated Mental Test Score (AMTS) was introduced in 1972 by Hodkinson [11] and is applied in quick evaluation of elderly patients for detecting dementia. The test is made up of 10 questions, and for each correct answer the respondent obtains 1 point. No answer or a wrong answer results in lack of score. The total amount of points suggests a preliminary diagnosis of dementia where the score of 6 points and lower indicates the possibility of its occurrence. The value ranging 7–10 points is considered to be a norm.

Clock Drawing Test (CDT) used for screening dementia. It enables the assessment of visual-spatial processes as well as the assessment of cognitive functions i.e. planning the course of cognitive activities as well as abstract-conceptual thinking. The test was developed in 1986 by Shulman and the team [12]. In practice, several versions of this test can be applied, which differ from each other in the types of tasks performed, their quantity and the way they are evaluated [13–15]. In Poland, two versions of the test are most commonly used, namely Sunderland's [14] and a three-trial version [16]. In a very general terms, the test consisting of 3 tests consists in drawing a blank clock face with the correct number of hours and the hands (3:00 and 11:10), drawing a long and short clock hand. The entire test lasts 2–10 minutes, and its key-based interpretation is made by an experienced clinician or a neuropsychologist.

The Hamilton Depression Rating Scale (HDRS) was developed in 1960 as a tool to measure the severity of depressive syndrome symptoms [17,18]. The scale is filled in by an experienced clinician (psychologist) based on interviewing and observing the patient as well as on information from the family or medical staff taking care of the patient. The tool evaluates 21 characteristics, to each of which there are assigned two to four levels of symptom severity. The assessed categories are extensive-range features including depressive mood, guilt, sleep disturbance, anxiety, agitation, somnolence, suicidal ideation, or psychomotor slowdown.

The Beck Depression Inventory (BDI) [19] was developed by Aaron Beck and his associates in 1961. The scale is used for self-assessment of the presence and severity of depressive symptoms. Because of its simplicity and effectiveness it is one of the most commonly used psychological tests. It consists of 21 questions. For each question one of the four possible answers should be ticked. For each answer the respondent can score from

0 to 3 points. The total score ranges from 0 to 63 points. In the case of obtaining the result 0–9 points — no depression, 10–19 points — mild depression, 20–25 points — moderate depression, 26 points and more — severe depression. The test lasts is approximately 20 minutes. Before conducting the study, it is necessary to specify in advance what period (a month, a week) the answers are supposed to refer to.

The Geriatric Depression Scale was developed in 1983 by Yesavage et al. [20] as a screening tool to assess the severity of depressive symptoms in the elderly. The full version of the scale consists of 30 short questions with two possible answers to be chosen (yes/no). According to the authors' assumption, the respondents fill the GDS themselves at their own pace [20]. In the literature, however, other suggestions can be found, such as filling it with the help of a second person [21] or responding by phone [22]. The Geriatric Depression Scale has also been translated into Polish and is one of the most commonly used screening tools for evaluating elderly depression [23]. There are still shortened versions of this scale, namely 15-item [24], 10-item [25], 5-item [26] and the shortest version, containing only 4 questions [25].

Conclusions

The research tools discussed above are commonly applied for clinical and research purposes both in Poland as well as in the world [27–30]. However, it should be remembered that, for example, these scales, as well as many others existing in everyday neurological practice, are not completely homogeneous and do not fall into one of four groups (physical, functional, mental, the quality of life), often entering the scope of a neighboring group including functional and social-life scales or scales of the quality of life.

References

- [1] Skalska A. Ograniczenie sprawności funkcjonalnej osób w podeszłym wieku. *Zdrowie Publiczne i Zarządzanie*. 2011;1:50–59.
- [2] Craft S., Cholerton B., Reger M. Aging and Cognition: What is Normal? W: Hazzard W.R., Blass J.P., Halter J.B., Ouslander J.G., Tinetti M.E. (Eds.), *Principles of Geriatric Medicine and Gerontology*. 5th ed. McGraw-Hill Companies, New York 2003;1355–1372.
- [3] Luijendijk H.J., van den Berg J.F., Dekker M.J. et al. Incidence and recurrence of late-life depression. *Arch Gen Psychiatry*. 2008;65(12):1394–1401.
- [4] Stuck A.E., Walthert J.M., Nikolaus T., Büla C.J., Hohmann C., Beck J.C. Risk factors for functional status decline in community-living elderly people: a systematic literature review. *Soc Sci Med*. 1999;48(4):445–469.
- [5] Wang L., van Belle G., Kukull W.B., Larson E.B. Predictors of functional change: a longitudinal study of nondemented people aged 65 and older. *J Am Geriatr Soc*. 2002;50(9):1525–1534.
- [6] Mehta K.M., Yaffe K., Covinsky K.E. Cognitive impairment, depressive symptoms, and functional decline in older people. *J Am Geriatr Soc*. 2002;50(6):1045–1050.
- [7] Hairi N.N., Bulgiba A., Cumming R.G., Naganathan V., Mudra I. Depressive symptoms, visual impairment, and its influence on physical disability and functional limitation. *J Am Geriatr Soc*. 2011;59(3):557–559.
- [8] Folstein M.F., Folstein S.E., McHugh P.R. "Mini-mental state". A practical method for grading the cognitive state of patients for the clinician. *J Psychiatr Res*. 1975;12(3):189–198.
- [9] Kotapka-Minc S. Znaczenie badania neuropsychologicznego w diagnostyce otępienia. *Pol. Przegl. Neurol*. 2007;3(2):61–68.
- [10] Mungas D., Marshall S.C., Weldon M., Haan M., Reed B.R. Age and education correction of Mini-Mental State Examination for English and Spanish-speaking elderly. *Neurology*. 1996;46(3):700–706.
- [11] Hodkinson H.M. Evaluation of a mental test score for assessment of mental impairment in the elderly. *Age Ageing*. 1972;1(4):233–238.
- [12] Shulman K.I., Shedletsky R., Silver I.L. The challenge of time: Clock-drawing and cognitive function in the elderly. *Int J Geriatr Psychiatry*. 1986;1(2):135–140.
- [13] Brodaty H., Moore C.M. The Clock Drawing Test for dementia of the Alzheimer's type: A comparison of three scoring methods in a memory disorders clinic. *Int J Geriatr Psychiatry*. 1997;12(6):619–627.
- [14] Sunderland T., Hill J.L., Mellow A.M. et al. Clock drawing in Alzheimer's disease. A novel measure of dementia severity. *J Am Geriatr Soc*. 1989;37(8):725–729.
- [15] Wolf-Klein G.P., Silverstone F.A., Levy A.P., Brod M.S., Breuer J. Screening for Alzheimer's Disease by Clock Drawing. *J Am Geriatr Soc*. 1989;37(8):730–734.
- [16] Burns A., Lawlor B., Craig S. *Assessment Scales in Old Age Psychiatry*. 2nd ed. Informa Healthcare, New York 2009.
- [17] Hamilton M. A rating scale for depression. *J Neurol Neurosurg Psychiatry*. 1960;23:56–62.
- [18] Hamilton M. Development of a rating scale for primary depressive illness. *Br J Soc Clin Psychol*. 1967;6(4):278–296.
- [19] Beck A.T., Ward C.H., Mendelson M., Mock J., Erbaugh J. An inventory for measuring depression. *Arch Gen Psychiatry*. 1961;4(6):561–571.
- [20] Yesavage J.A., Brink T.L., Rose T.L. et al. Development and validation of a geriatric depression screening scale: a preliminary report. *J Psychiatr Res*. 1982–1983;17(1):37–49.
- [21] O'Neill D., Rice I., Blake P., Walsh J.B., Coakley D. The geriatric depression scale: Rater-administered or self-administered? *Int J Geriatr Psychiatry*. 1992;7(7):511–515.
- [22] Carrete P., Augustovski F., Gimpel N. et al. Validation of a Telephone-administered Geriatric Depression Scale in a Hispanic Elderly Population. *J Gen Intern Med*. 2001;16(7):446–450.

- [23] Rybakowski J., Pużyński S., Wciórka J. *Psychiatria. Podstawy psychiatrii*. Tom 1, Wyd. Elsevier Urban & Partner, Wrocław 2010.
- [24] Sheikh J.I., Yesavage J.A. Geriatric Depression Scale (GDS): Recent Evidence and Development of a Shorter Version. W: Brink T.L. (Ed.), *Clinical Gerontology: A Guide to Assessment and Intervention*. The Haworth Press, New York 1986;165–173.
- [25] van Marwijk H.W., Wallace P., de Bock G.H., Hermans J., Kaptein A.A., Mulder J.D. Evaluation of the feasibility, reliability and diagnostic value of shortened versions of the geriatric depression scale. *Br J Gen Pract*. 1995; 45(393):195–199.
- [26] Hoyl M.T., Alessi C.A., Harker J.O. et al. Development and testing of a five-item version of the Geriatric Depression Scale. *J Am Geriatr Soc*. 1999;47(7):873–878.
- [27] Abrams W.B., Beers M.H., Berkow R. (Eds.), *MSD Podręcznik geriatricii*. Wyd. Elsevier Urban & Partner, Wrocław 1999.
- [28] Kostka T., Koziarska-Rościszewska M. *Choroby wieku podeszłego*. Wyd. Lekarskie PZWL, Warszawa 2009.
- [29] Grodzicki T., Kocemba J., Skalska A. (Red.), *Geriatricia z elementami gerontologii ogólnej*. Wyd. Via Medica, Gdańsk 2007.
- [30] Gallo J., Fulmer T., Paveza G., Reichel W. (Eds.), *Handbook of geriatric assessment*. 4th ed. Jones & Bartlett Publishers, Massachusetts 2006.

Corresponding Author:

Monika Biercewicz

Clinic of Geriatrics, Collegium Medicum,

Nicolaus Copernicus University

ul. M. Skłodowskiej-Curie 9, 85-094 Bydgoszcz, Poland

e-mail: kikgeriat@cm.umk.pl

Conflict of Interest: None

Funding: None

Author Contributions: Monika Biercewicz^{A, B, E, H}, Wiesław Fidecki^{F-H}, Mariusz Wysokiński^{F-H}, Beata Haor^{F-H}, Mariola Głowacka^{F-H}, Kornelia Kędziora-Kornatowska^{F-H}

(A — Concept and design of research, B — Collection and/or compilation of data, E — Writing an article, F — Search of the literature, G — Critical article analysis, H — Approval of the final version of the article)

Received: 17.11.2016

Accepted: 27.01.2017