

Features of language disorders in a person in advanced old age without known comorbid neurological or dementia diseases after undergoing a nervous breakdown

Cechy zaburzeń językowych u osoby w zaawansowanej fazie starości bez stwierdzonych współistniejących chorób neurologicznych i otępiennych po przejściu załamania nerwowego

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Słowa kluczowe: zaburzenia językowe, zaawansowana faza starości, deficyty pamięciowe, załamanie nerwowe.

Abstract

Introduction: Features of mixed language and communication disorders were described in a woman in advanced old age (82 years) who underwent a nervous breakdown after a random event. Following consent for the study, attempts were made to verify language symptoms indicating forgetfulness of names (anomia), confusion of meanings in terms of designators and actions, and inconsistency of context with the speaker's intention. The result of the traumatic experience was, on the psychological level, a nervous breakdown. Mutistic features (withdrawal from the act of speaking) were observed, which were not associated with symptoms of motor aphasia. This type of aphasia was ruled out because the patient exhibited good articulatory organs. Sensory features with a prototype of Wernicke's aphasia were left for evaluation. The respondent had difficulty in distinguishing the meanings of objects; moreover, she did not understand the intent of messages.

Aim of the research: Evaluation of syntactic-semantic features of language on the example of selected speech samples, and determination of the relationship between the presence of features of sensory-sensory aphasia and mental incident in an elderly person. The person concerned represented the beginning of a pathological process on the neurological and mental levels.

Material and methods: The study was empirical in nature. Tests for speech motor, pragmatics, and semantics of language were used. An attempt was made to understand intentions based on the situation presented and questions expressed in the conditional mode. In addition, a differential diagnosis of the presented disorders was made using the Mini-Mental State Examination (MMSE) test to assess cognitive activity.

Results: With normal motor attempts (partial comprehension at the level of imitation), comprehension deficits of a formal-contextual nature were observed at the level of intention and accompanying emotion, such as reactions to a message with different intonation contours. When aphatic features were combined with nervous breakdown, there was an impoverishment of both active and passive vocabulary. The MMSE scale shows a cognitive deficit in the patient.

Conclusions: Features of disorders of language, speech, and communication can reveal themselves after a neurological incident, mechanical trauma, or a severe psychological experience. In the case of the respondent, there were symptoms of articulatory and semantic fluency, difficulty in programming speech in line with the topic at hand, and withdrawal from the communicative act. Depletion of the passive lexicon appeared due to a nervous breakdown. However, another aetiology cannot be ruled out, including an already ongoing, pathological process of a neurological nature.

Streszczenie

Wprowadzenie: Opisano cechy mieszanych zaburzeń językowo-komunikacyjnych u kobiety w zaawansowanej fazie starości, która przeszła załamanie nerwowe po zdarzeniu losowym. Wyodrębniono symptomy językowe wskazujące na zapominanie nazw (anomia), mylenie znaczeń w zakresie desygnatów i czynności oraz brak zgodności kontekstu z intencją rozmówcy. Skutkiem traumatycznego doświadczenia było na płaszczyźnie psychicznej załamanie nerwowe. Zaobserwowano cechy mutystyczne (wycofanie z aktu mówienia), które nie były związane z objawami afazji motorycznej. Ten rodzaj afazji wykluczono, ponieważ pacjentka wykazywała dobrą sprawność narządów artykulacyjnych.

Cel pracy: Ocena cech syntaktyczno-semantycznych języka na przykładzie wybranych próbek mowy oraz ustalenie zależności między występowaniem cech afazji czuciowej – sensorycznej – a incydem natury psychicznej u osoby starszej, u której rozpoczął się proces patologiczny na płaszczyźnie neurologicznej i psychicznej.

Materiał i metody: Badanie miało charakter empiryczny. Wykorzystano testy do badania motoryki mowy, pragmatyki i semantyki języka. Przeprowadzono próbę rozumienia intencji na podstawie prezentowanej sytuacji oraz pytań wyrażonych w trybie przypuszczającym.

Wyniki i wnioski: Cechy zaburzeń na poziomie języka, mowy i komunikacji mogą się ujawnić po przebyciu incydentu neurologicznego, urazu mechanicznego oraz po ciężkim doświadczeniu natury psychicznej. W przypadku badanej objawy niepełności artykulacyjnej i semantycznej, trudności z zaprogramowaniem wypowiedzi zgodnej z poruszonym tematem, wycofanie z aktu komunikacyjnego czy zubożenie leksykonu biernego pojawiły się w wyniku załamania nerwowego. Nie można jednak wykluczyć innej etiologii, w tym już wcześniej toczącego się, patologicznego procesu natury neurologicznej.

Introduction

Old age undeniably constitutes a natural stage of life. Multifaceted and interdisciplinary research conducted on this period of human life still has not led to the development of a single definition that specifies “old age”. Researchers consider this phase of life in terms of gradual loss of physical and mental faculties associated with natural or pathological ageing of body systems [1, 2]. According to the Dictionary of Social Gerontology, compiled by Adam Zych, old age is understood as a natural and inevitable process, involving the synergetic interaction of biological, psychological, and social processes [3].

The article analysed linguistic features in a person in advanced old age, the aetiology of which was not fully understood. From the interview conducted with the caregiver of the person under study, it appeared that she underwent a nervous breakdown, after which the environment observed first a depletion in active and passive vocabulary, and then features of anomie. A puzzling issue was not only the occurrence – from a neurological perspective – of features of mixed aphasia, i.e. expressive-impressive with a dominant profile of Wernicke’s aphasia (problems at the level of understanding and perception of sensory stimuli), with amnesic symptoms in the absence of any reports of stroke, Alzheimer’s disease, or other neurological incidents, but also the fact that such peculiar features of language disorders manifested themselves after experiencing a psychological trauma. This raised the question of whether disorders at the level of the language, speech, and communication were closely related to a specific incident of purely neurological origin, such as stroke or craniocerebral trauma, or whether they were dictated solely by psychological trauma, the consequence of which was a nervous breakdown.

The progression of certain processes could not be stopped. On foreign soil, old age was treated as an involuntary process. At the same time, it was emphasised that the determination of the early phase of changes associated with the ageing process was very difficult [3–6]. In Poland, the definitional aspect was mainly concerned with the consideration of changes associated with natural age versus ongoing disease processes [7]. Stefan Klonowicz, defined old age as “one of the normal stages of personal development”, which was associated with morphological and functional

changes of the organism occurring with age, which consequently leads to a reduction in its efficiency [8]. Elzbieta Trafialek said that old age was a natural phase of life, which was manifested by many changes occurring in the human body. They generate consequences that concern not only a decrease in physical fitness, associated with a decline in the body’s capacity, but also a reduction in immune forces (physiological/biological old age). In addition, a person in advanced old age had difficulty adapting to any changes, and often needed help and support from the environment [9]. Kijak and Szarota added, in their considerations, that aging was a multidimensional process, which was typically the result of internal and external factors, such as genotype and phenotype [10].

Aim of the research

The results of the present observations aimed to show the features at the level of syntax and its connectivity with meaning at the linguistic level in an elderly person with symptoms of sensory aphasia, resulting from an incident of psychological trauma. Subsequently, the aim of the study was to establish the relationship between the occurrence of these features with the psychological incident, and to verify whether the causes of these symptoms were related to typical physiological ageing of the brain or a pathological process.

Material and methods

While observing the speech and communication features of one of the wards of a social welfare home in the Świętokrzyskie voivodeship, disturbing symptoms that had not been present before were noticed. These included cognitive processing disorders, difficulties in receiving messages, emotional lability, and progressive withdrawal from daily life. This prompted research toward a neurologopaedic diagnosis. After receiving consent for the study from both the care recipient herself and her caregivers, research activities were undertaken. Initially, a motor speech disorder was suspected because the person did not exhibit verbal features. A thorough interview was conducted, which revealed that the subject had undergone a mental incident related to a traumatic random event.

The article presents the results of the study, based on the obtained linguistic-cognitive samples, to assess

the receptive and perceptive levels. In the diagnosis of linguistic features, the following research procedure was included:

- Articulatory motor examination (purpose: assessments of the work of the articulatory organs);
- Assessment of functioning in a pragmatic situation (goal: assessment of coping in a communicative situation);
- Study of semantic categorisation (purpose: diagnosis of the level of understanding of thematic categories);
- Verification of performance at the level of situational comprehension and feedback (purpose: to diagnose reactions to the situation and determine the correspondence between the subject's intentions and those of the interlocutor).

The above tests are not research tools, so they are not a set of standardised tests, but they define the direction of verification of proficiency in the process of speaking, language processing and functioning of the patient in the sphere of communication. The form of their presentation is the author's own invention.

Due to the fact that the subject had features of a nervous breakdown, the effects of which are observable in speech production and language processing, it was decided to carry out test trials with the Cognitive Activity Rating Scale (TEST MMSE – Mini Mental State Examination), in the direction of assessing the following skills: orientation in time and place, memorisation, attention and counting, recollection, language functions, following instructions, writing, and construction praxis. The results of the indicated trials are presented in the Results section.

Description of research procedure

The Table 1 singles out activities in tongue and lip movements that may suggest other motor symptoms affecting articulatory abnormalities [11].

Another tool used in the process of diagnosing language and communication features was a questionnaire based on the Pragmatics Rating Scale (PRS),

which, moreover, was used, among other things, in the diagnosis of pragmatic abilities in children and adults with cognitive disorders, including the autism spectrum.

Individual areas of assessment of the subject's ways of coping in specific language situations were presented. Features, such as excessive giving of facts, confusion of context and situation, and vocabulary, were designed to check the level of coping in the communicative act. The tip-of-the-tongue phenomenon (TOT) referred to the inability to find in memory the names of objects that were related in meaning and context to the event in question. The presence of other linguistic symptoms, such as an excess of pragmatic words or, on the contrary, laconicisms in verbal and textual utterances, were aimed at verifying whether the patient is at risk of, for example, mnemonic disorders, permanent pathological symptoms at the level of various subsystems of language, and whether these symptoms were temporary, whether they were identified with aphatic effects, and whether they would be partially or completely corrected in the course of ongoing neurologopaedic therapy.

The PRS questionnaire was used to observe such factors as easy establishment of the communicative act, asking questions unrelated to the subject of the speech, excessive facts, confusing the context of the speech, TOT phenomenon, use of verbal pragmatisms, social interaction, incoordination in speech, and stereotypical statements.

In the semantic categorisation test of naming (Table 2), it is about the test subject's indication of the correct meaning of verbal and graphic material. Verbal material activates individual hippocampal areas in the brain, including associative speech. On the basis of illustrated material, dexterity was verified on the level of such processes as differentiation, object categorisation, and visual-spatial skills. The patient also saw a letter pattern of a sentence with a highlighted word on which semantic emphasis falls. The questionnaire was addressed in Polish language, so an English translation was provided for clarity.

Table 1. Articulatory motor study sample; assessment of lip and tongue movements

Articulatory motor test	
Motor tests of the lip circular muscle	Tongue motor tests
– pulling and stretching the lips – tightening the lips – superimposing the upper lip on the lower lip – overlapping the lower lip on top of the upper lip – narrowing, expanding, and tightening the lips – puffing up the cheeks – arranging the lips into a snout – smacking, screeching, whistling – stretching closed lips from side to side	– extending the tongue out of the mouth – directing the tongue to the corner of the mouth – flattening the tongue – lifting the tongue to the hard palate – reaching the teeth with the tongue while the mouth is open – flicking the tongue and holding it in a vertical-horizontal position

Source: own compilation based on the Articulatory Motor Test Card, authored by Hanna Rodak [11].

Table 2. Semantic categorisation study sample

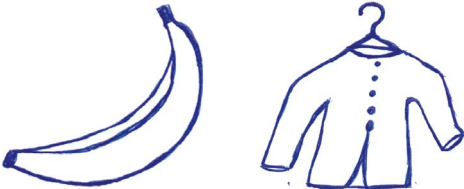
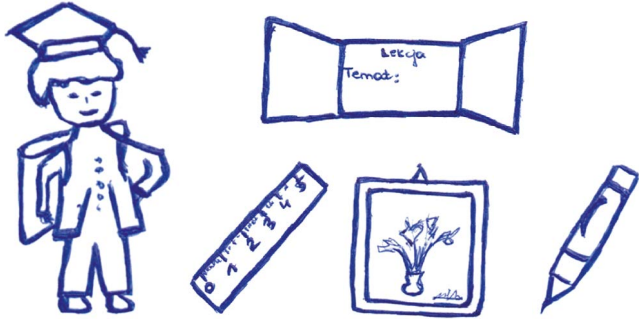
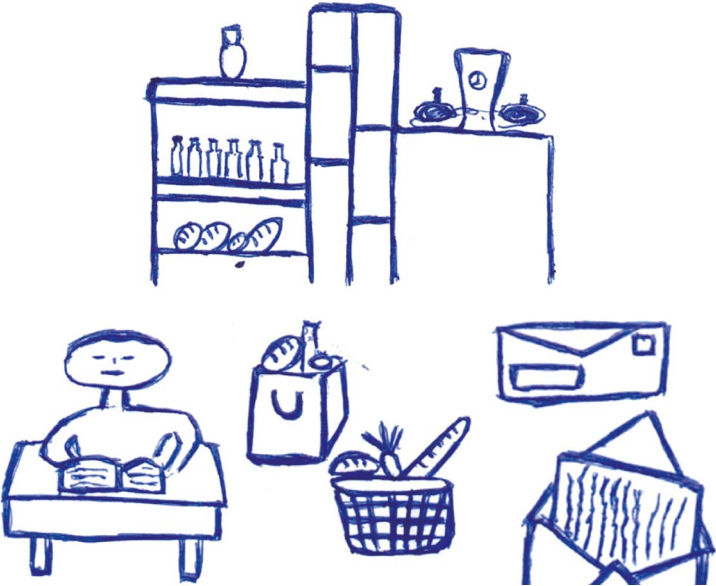
Question in a verbal form	Question in verbal form supported by visual pattern
1. Banan to owoc czy element garderoby? (Is a banana a fruit or a garment item?)	Banan to owoc czy element garderoby? 
2. Który przedmiot nie należy do zbioru: lodówka, krzesło, stół, łóżko? (Which object does not belong to the set: refrigerator, chair, table, bed?)	Który przedmiot nie należy do zbioru: lodówka, krzesło, stół, łóżko? 
3. Z jakich przyborów korzysta uczeń: tablica ścienna, linijka, obraz, długopis? (What utensils does the student use: wall board, ruler, picture, pen?)	Z jakich przyborów korzysta uczeń : tablica ścienna, linijka, obraz, długopis? 
4. Co człowiek może robić z książką: gotować, malować, czytać? (What can a person do with a book : cook, paint, read?)	Co człowiek może robić z książką : gotować, malować, czytać? 

Table 2. Cont.

Question in a verbal form	Question in verbal form supported by visual pattern
5. Do sklepu idzie się po: lekcje, zakupy czy odbiór poczty? (Do you go to the store for: lessons, shopping, or to pick up your mail?)	Do sklepu idzie się po: lekcje, zakupy czy odbiór poczty? 

Source: Own elaboration.

Description of the course of the comprehension study

The interlocutors presented the patient with a description of the situation, asking in conditional form to elicit feedback.

Examples of situational descriptions

Sytuacja nr 1 – Jest ładna pogoda. Pani spaceruje chodnikiem. Słychać śmiech dzieci bawiących się w pobliskim parku. Nagle na ulicy dochodzi do zderzenia się pojazdów. Co zrobiłaby Pani, będąc świadkiem wypadku komunikacyjnego?	Situation No. 1 – It's nice weather. You are walking along the sidewalk. You can hear the laughter of children playing in a nearby park. Suddenly, there is a collision of vehicles on the street. What would you do if you witnessed a traffic accident?
Sytuacja nr 2 – Przygotowuje się Pani na wyczekiwane urodziny jedynego wnuka. Wcześniej zakupiła Pani dla niego prezent. Co zrobiłaby Pani w sytuacji, kiedy zorientowałaby się Pani w drodze na przyjęcie, że zapomniała upragnionego prezentu?	Situation No. 2 – You are preparing for the eagerly awaited birthday of your only grandchild. You have already bought a present for him. What would you do if you realised on the way to the party that you had forgotten the present?
Sytuacja nr 3 – Zażywa Pani leki, w których ważne jest przestrzeganie dawek i pór ich przyjmowania. Co zrobiłaby Pani w momencie, kiedy pomyliłaby Pani dawkę i porę zażycia leków?	Situation No. 3 – You are taking medication in which it is important to keep to the doses and when you take them. What would you do if you got your dose and time of medication wrong?
Sytuacja nr 4 – Jak zachowałaby się Pani, gdyby zadzwonił funkcjonariusz policji i poprosił o przekazanie określonej sumy pieniędzy, tłumacząc, że takie działanie pomoże w schwytaniu grupy złodziei?	Situation No. 4 – How would you behave if a police officer called and asked you to hand over a certain amount of money, explaining that such an action would help to catch a group of thieves?
Sytuacja nr 5 – Jak zachowałaby się Pani, gdyby przyszedł do Pani przedstawiciel firmy świadczącej usługi telekomunikacyjne i zaoferował promocję jedynie w zamian za podpisanie na miejscu stosownych dokumentów?	Situation No. 5 – How would you behave if a representative of a telecommunication service provider came to you and offered a package deal only in exchange for signing the relevant documents on the spot?

Table 3. Overview of the subject's language symptoms

Variable	Current symptom	No symptom
Easy establishment of a communication act		✓
Asking unrelated questions	✓	
Excessive number of facts	✓	
Mistaking the context of statements	✓	
TOT phenomenon	✓	
The use of verbal pragmatisms		
Social interaction	✓	✓
Speech discoordination	✓	
Stereotypical statements	✓	

and stretch her lips and extend them laterally with the mouth closed. The patient performs these actions, reacting only to a pattern shown by the therapist. On the other hand, commands such as 'Please put your upper lip on top of your lower lip' or 'Please whistle, screech, or smack' are not understood. The mobility of the tongue also achieves regularity. However, it should be considered that the patient performs these actions by merely mimicking the movements of the examiners. There is a poor response to comprehension of the command, and often no response at all. A lack of independence at the receptive level is perceived. The level of understanding is realised through the partially preserved ability to imitate.

The results of the **PRS scale** indicate a pathological symptom in terms of semantic discoordination, followed by interaction in communication and orientation in distinguishing the meanings of certain linguistic categories (Table 3).

The symptoms observed were based on the following:

- difficulty in engaging in spontaneous conversation, as well as with starting the speech act,
- asking questions out of context,
- excessive number of facts in one utterance (facts with different contexts),
- dealing with several topics at once,
- difficulties with word recall, including impoverished passive vocabulary,
- low interaction skills,
- dyscoordination in the process of speaking with features of simple fluency of speech accompanied by psychosomatic symptoms such as sweating palms, uneven breathing, nervousness,
- presentation of habitual language patterns and perseveration of words or phrases, e.g. 'jakie są tu', 'jakie są tu'.

The TOT phenomenon, which consists of the patient's inability to recall a given phrase, word, context, or further part of a sentence, in the case of the respon-

dent refers to difficulties in recalling a given lexeme that does not always fit the context of the utterance. This phenomenon accompanies both healthy people and those presenting cognitive deficits, e.g. in dementia diseases.

An example of spontaneous speech in which the TOT phenomenon is present, in addition to semantic inconsistency, repetition (perseveration), is as follows:

Mam dziś mam duże takie owoce... i one są moje, w mojej misce, w tej no... dużej. Chcę pokazać bardzo dobre owoce. Chcę... chcę pokazać to, że dzieci przyjdą.

In the study of **semantic categorisation**, 4 misidentifications of the verbal pattern were characteristic, while the subject made 5 accurate identifications based on the pictorial material. Finding the correct concept in the lexical resource was difficult in examples 2–5. The respondent became confused when searching for words related to linguistic categories such as: 'furniture', failing to identify 'fridge' as a piece of equipment that does not fit with furniture, such as 'chair', 'table', and 'bed' (Table 2, example 2). In instruction 3, the respondent associated only 'pen' with the term 'student', as well as 'bench', which did not appear in the example at all. Another difficulty was the formal-meaning identification in terms of the infinitive form of the verbs 'cook', 'paint', 'read', and the noun 'book'. There was no response to the command in example 5. The correct response was indicated by the respondent only in example 1, identifying the term 'banana' with the category 'fruit'.

In terms of illustrated associations, an inverse proportion was noted; 4 results were correct (examples 1–4). The subject was able to recognise the designator and correlate it with the object in the picture. Occasionally, she gave several matching names to one designator.

The study of **situational comprehension and feedback** showed a partial incompatibility of the subject's operational knowledge with that of the observa-

tion interlocutors. The linguistic categories were inadequate for a common chain of thought.

The following feedback emerged in response to question 1:

'Call them', 'meet them' instead of, e.g., notifying the relevant services about the incident and doing the appropriate thing, including trying to help or seeking help from others – the police or the emergency room.

Using question 2 as an example, one semantic category – 'buying a gift' – dominated the responses. The respondent reacted appropriately to the event presented in the description of the situation by giving the possibility of compensation in an intangible form, e.g. buying something else, such as 'another gift', 'a trip', etc. However, when asked by the interlocutor to elaborate on the category 'buying a gift', she was unable to give a concrete thing. For example, 'going out for ice cream', 'extra pocket money', or 'a trip to a specific place'.

In response to question 3, the respondent did not find a practical solution to the situation, such as calling or going to the pharmacy and asking for advice from a specialist.

The situations initiated in questions 4 and 5 referred to the problem of elderly people being exploited in common methods, such as "playing policeman" or "sales representative". The respondent did not show vigilance here either, showing no doubt in the credibility of the situation and its protagonists.

Assessment of cognitive activity with the Mini-Mental Scale

Results of the test conducted after the patient signed consent for the study (Figure 1).

The study of the cognitive activity results:

The patient was unable to point out the date on the day of the test (time orientation), and failed to re-

TEST MMSE – Mini-Mental State Examination Krótka Skala Oceny Aktywności Poznawczej

1. ORIENTACJA W CZASIE I MIEJSCU	
Orientacja w czasie Jaki jest teraz rok? Jaka jest teraz pora roku Jaki jest teraz miesiąc? Jaka jest dzisiejsza data (którego dzisiaj mamy)? Jaki jest dzisiaj dzień tygodnia?	Orientacja w miejscu W jakim kraju się znajdujemy? W jakim województwie się znajdujemy? W jakim mieście się teraz znajdujemy? Jak nazywa się miejsce, w którym się teraz znajdujemy? Na którym piętrze się obecnie znajdujemy?
Punkcja: 1 – poprawnie, 0 – niepoprawnie	Suma poprawnych
2. ZAPAMIĘTYWANIE	
Wymienię teraz trzy słowa. Kiedy skończę, proszę, aby je Pan/Pani powtórzył(a). Poniższe słowa wypowiadamy wolno i wyraźnie (jedno słowo na sekundę)	
BYK MUR LAS	
Punkcja: 0 – 3 przy 3 próbach za pierwsze powtórzenie 3	
3. UWAGA I LICZENIE	
Proszę odejmować kolejno od 100 po 7, aż powiem stop	
Punkcja: 0 – 5 przy 5 wynikach.	
4. PRZYPOMINANIE	
Proszę wymienić trzy słowa, które Pan(i) miał(a) wcześniej zapamiętać	
Punkcja: 0 – 3. Przy 3 próbach za pierwsze powtórzenie 3.	
BYK MUR LAS	

Figure 1. The Mini-Mental scale

5.	FUNKCJE JĘZYKOWE Nazywanie Prosimy o nazwanie dwóch przedmiotów, które kolejno pokazujemy badanemu (ołówek, zegarek) Jak nazywa się ten przedmiot (ołówek)? 1 Jak nazywa się ten przedmiot (zegarek)? 1 Punkcja: 0 – 2. Powtarzanie Proszę dosłownie powtórzyć następujące zdanie: <i>Ani tak, ani nie, ani ale</i> 0 Punkcja: 0 – 1. Suma poprawnych 2
6.	WYKONYWANIE POLECEŃ a) Proszę uważnie posłuchać treści całego polecenia, a następnie wykonać to polecenie: proszę wziąć kartkę do lewej/prawej ręki (w zależności od ręki dominującej) złożyć ją oburącz na połowę i położyć ją na kolana 0/1 Punkcja: 0 – 3 po jednym punkcie za każdą poprawną reakcją. b) Pokazujemy badanemu tekst polecenia wydrukowany na tylnej okładce: „proszę zamknąć oczy” Proszę przeczytać to polecenie i je wykonać 0 Punkcja: 0 – 1. Suma poprawnych 1
7.	PISANIE Dajemy osobie badanej czystą kartkę papieru i prosimy o napisanie dowolnego zdania. Zdanie powinno być spontaniczne i sensowne. Poprawna ortografia i interpunkcja nie są konieczne. Punkcja: 0 – 1. 1
8.	PRAKSJA KONSTRUKCYJNA Proszę przerysować ten rysunek tak dokładnie, jak tylko jest to możliwe. Chory może wielokrotnie spontanicznie podejmować próby kopiowania – oceniamy ostateczną wersję rysunku, każda z figur musi mieć 5 boków i 5 kątów, a część wspólna powstała w wyniku nałożenia się obu pięciokątów powinna tworzyć czworokąt. Za rysunek zrotowany nie przyznajemy punktu. Dopuszczalne jest pomniejszenie wymiarów całego rysunku. Rysunek zamieszczony jest na 2 arkuszu odpowiedzi Punkcja: 0 – 1. 0,5
OGÓLNA LICZBA PUNKTÓW 20,5	
Interpretacja wyniku: 30 – 27 – wynik prawidłowy 26 – 24 – zaburzenia poznawcze bez otępienia 23 – 19 – otępienie lekkiego stopnia 18 – 11 – otępienie średniego stopnia 10 – 0 – otępienie głębokie	

Figure 1. Cont.

fer to answer the question “on which floor are we currently located” (place orientation).

In terms of memorising the words BYK, MUR, LAS – she repeated all the lexemes.

There was a problem with command 3. In 5 attempts to subtract the number 7 from 100, she got 3 correct results.

In terms of the deferred test, i.e. words previously memorised, the patient reproduced only 2 words,

i.e. BYK and MUR. On the other hand, she replaced the word LAS with LIS.

The range of naming words (command No. 5) was within the norm, while there were difficulties with the literal reproduction of the sequence “neither yes, nor no, nor but”.

The respondent understood the directed commands. She took a piece of paper in her hand, sequentially folding it in half with both hands, and then

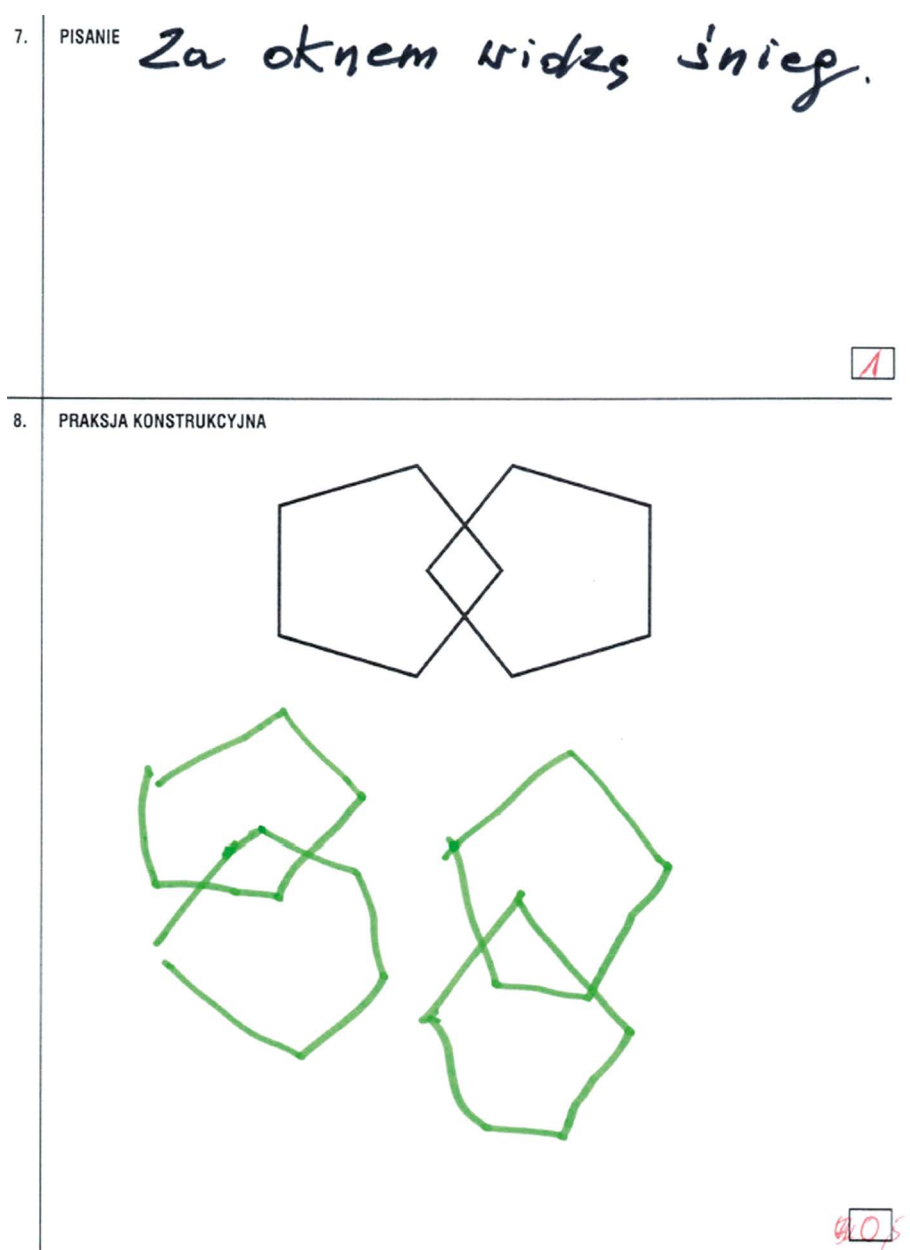


Figure 1. Cont.

placed it on her lap. However, there was a slight issue with interpreting the request to follow the command in the correct order, i.e. read the command “please close your eyes” and follow it.

The writing activity was successful, and the reproduction of the construction on the paper showed half correctness. In our opinion, the patient is able to reproduce a figure with 5 sides, thus preserving the praxis movements. She only confused the direction of the mapping, i.e. vertical instead of horizontal. This may indicate an unspecified deficit in cognitive orientation in space or include the effects of visual dyslexia.

Discussion

The recognition of disorders with a neurological, psychological, or cognitive basis includes several criteria: anatomical, physiological, psychological, linguistic, and logopaedic. The differences between aphatic features – seen as specific language disorders following neurological incidents [12], and dementia features – increasing psychopathological symptoms in the course of neurodegenerative diseases [12, 13], are not always clear-cut. The juxtaposition of aphatic, dementia, and vacillating features of mental function is due to the treatment of these disorders as

consequences of neurological conditions, on the one hand, and as mixed, i.e. and/or with a background of impaired mental function, on the other. The cause of these issues is not fully understood.

In medical science, aphasia is one of the symptoms of brain damage, occurring alongside symptoms such as plegia, paraesthesia, ataxia, apraxia, hemianopsia, agnosia, and others [14]. As a symptom, it is the result of neurological disease [14]. The term phasia (Gr. *fa-zis*, Latin *phasis* 'speech') denotes a set of neurophysiological activities taking place in the central nervous system (CNS) that enable speaking and comprehending speech. Disruption of these activities as a result of damage to the central nervous system is referred to by the terms aphasia or dysphasia [15–18].

The term dementia is derived from Latin. Dementia means heedlessness, folly, madness, insanity, from: *demens*- stupid, mad, insane. In Polish literature and clinical practice, the term is used interchangeably with dementia. By definition, dementia is 'a syndrome of behavioural disorders caused by cerebral dysfunction of known or unknown aetiology, leading to a general breakdown of cognitive functions, emotions, personality, and social functioning of a person' [19, 20].

The ageing process manifests itself through muscle weakness, reduced coordination of movements and gestures, impaired activity of purposeful actions, inability to perform often even the simplest daily activities, e.g. preparing and eating meals, taking care of the toilet and personal hygiene [21]. Apraxia refers to a disturbance in the execution of movements, which can be caused by a weakness of muscle strength. Apraxia of speech is a speech disorder that results from realisation difficulties in the planning and programming of muscular movements of the articulatory organs involved in the speech distribution process [22]. Apraxia is characterised by the occurrence of articulatory errors, e.g. phonetic paraphrases, vowel distortions, substitutions, slowed speech rate, and prosody specific to this disorder (slow speech rate, verbal fluency disorders, disturbed accentuation characterised by uniformity of speech) [23]. The causes of realisation difficulties may include flaccidity and atrophy of masticatory muscle fibres, loss of neuromuscular coordination, dysfunction of the temporo-mandibular joints, loss of teeth, use of dentures [24], and slowing and decreased precision of articulatory organ movements [25].

Older people also experience changes in the rate of speech, which depends on several factors. Among these are the age of the patient, the presence of diseases, and the functioning of the central nervous system. In addition to physiological factors, there is an index of sociophonetic facts (region of origin, degree of mastery of a foreign language if the utterance is produced in that language, type of relationship with the interlocutor), stylistic (dialogue vs. monologue, spoken vs. read

text, length of utterance), and psychological (emotional state of the speaker) [26]. The ageing of the nervous system affects the slowing down of the neurodevelopmental system, emerging attention deficits, and disorders in the programming of utterances [27].

According to the American Psychiatric Association's DSM-IV definition, dementia primarily refers to disorders of memory, both short-term (inability to remember new information) and long-term (inability to reproduce existing information/memories/facts in memory). In addition, speech disorders in aphasia, agnostic disorders, apraxia, and executive function disorders also appear. All these factors lead to difficulties in every sphere of functioning for the individual, who, over time, requires support and assistance from others in performing activities of daily living [28]. From a linguistic perspective, the patient gradually loses syntactic and semantic skills, and communication skills become impaired.

The symptoms presented so far may occur in a homogeneous form, e.g. only mental dysfunction, nervous breakdown, or mental state with a poor prognosis, which may affect the mental functioning of the individual. They can also become heterogeneous disorders, with one dominant symptom or several that are exacerbated to a similar degree. As a result, this can generate mixed symptoms – dementia and depression, with a concomitant impact on the deterioration of motor and language and communication functions as well [6, 8, 25, 29].

Language disorders, impaired cognitive processes, deteriorating precision of movement, or impaired mental functions are among the first signs of neurodegenerative processes occurring in the affected brain. Amnesic syndromes are other features of the brain in which the pathological process develops. This is a very characteristic group of disorders concerning the loss by the said organ of the ability to acquire new information (sequential amnesia) and to reproduce information that was acquired before the brain damage (retrograde amnesia) [30]. A phenomenon called temporal gradient is often observed, whereby the older the memory trace, the more resistant it is to the degradative and pathological processes occurring in the human brain. Fresh memory traces are degraded first, then episodic memory traces. Eventually there is a loss of the ability to perceive, recognise, and identify specific objects, places, events, people, and situations.

Conclusions

The analysis of linguistic elements in a person with indeterminate cerebral symptoms leads one to reflect on the recognition of mixed symptoms, i.e. aphatic, dementia and psychiatric symptoms, as factors that may cause symptoms of nervous breakdown. On the other hand, the nervous breakdown may in this case be the result of an ongoing pathological process.

Language symptoms take a heterogeneous form. They include performance difficulties with preserved muscle mobility of the articulatory organs, which are caused by problems at the level of comprehension rather than deficits in the speech apparatus. Hence, articulatory and semantic fluency appear. At the level of linguistic-communicative proficiency, the inability to program a response fully in line with the topic being addressed is characteristic. Attempts to enter a communicative act initiated by the interlocutors are unsuccessful because the deficits occurring at the level of comprehension prevent a normative response to the messages.

The feedback instructions were intended to show whether the elderly person logically seeks a way out of situations that are among the occasional ones. What was observed in this case was not only an inability to deal with a pragmatic problem, but also a lack of emotional expression. A response was attempted, but ongoing pathological processes in the brain result in impaired cognitive function.

A consequence of the psychological trauma experienced may be a lack of verbal response, resulting in a closure to experiencing a communicative, dialogical situation, to expressing oneself in spontaneous and narrative speech. The result is a depletion of the passive lexicon, i.e. the vocabulary at the level of conceptual understanding, which generates a mixed nature of language disorders with a complex aetiology.

After differential diagnosis with the Cognitive Activity Rating Scale, mild cognitive deficits were found, which, according to the examination, fall within the range of mild dementia. Given that the patient did not have clinically diagnosed Alzheimer's disease, we believe that this condition may be the result of a traumatic experience, and the patient should be under the constant care of a psychotraumatologist. In the case of disturbances in the emotional-volitional sphere, effects also are observed at the level of speech, language, and communication.

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Conflict of interest

The authors declare no conflict of interest.

References

1. Fries JF. Aging, natural death, and the compression of morbidity. *N Engl J Med.* 1980; 303: 130-135.
2. Lane NA. Unifying view of ageing and disease: the double agent theory. *J Theor Biol.* 2023; 225: 531-540.
3. Baltes B. The aging mind: potential and limits. *Gerontologist.* 1993; 33: 580-594.
4. Anderson S, Brenner BM. Effect of aging on the renal glomerulus. *Am J Med.* 1986; 80: 435-442.
5. Cohen G. Language comprehension in old age. *Cogn Psychol.* 1979; 11: 412-429.
6. Birren JE, Fisher LM. Aging and speed of behavior: possible consequences for psychological functioning. *Rev Psychol.* 1995; 46: 329-353.
7. Zych AA. *Słownik gerontologii społecznej.* Wydawnictwo Akademickie "Żak", Warszawa 2001; 202.
8. Klonowicz S. *Oblicza starości: wybrane zagadnienia gerontologii społecznej.* Wiedza Powszechna, Warszawa 1979; 10.
9. Trafiątek E. *Starzenie się i starość. Wybór tekstów z gerontologii społecznej.* Wydawnictwo Uczelniane Wszechnica Świętokrzyska, Kielce 2006; 269.
10. Kijak RJ, Szarota Z. *Starość: między diagnozą a działaniem.* Centrum Rozwoju Zasobów Ludzkich, Warszawa 2013; 12.
11. Rodak H. Karta badania motoryki artykulacyjnej. In: *Terapia dziecka z wadą wymowy.* Wydawnictwo Uniwersytetu Warszawskiego, Warszawa 2002.
12. Panasiuk J. Neurobiological mechanisms of emotional and volitional behaviors vis-à-vis strategies for logopedic therapy. In: *Polish logopedic society. Logopedia 47-2.* Panasiuk J (ed.). Polskie Towarzystwo Logopedyczne. Zarząd Główny, Lublin 2018; 51-70.
13. Mesulam MM, Grossman M, Hillis A, Kertasz A, Weintraub S. The Core and Halo of Primary Progressive Aphasia and Semantic Dementia. *Ann Neurol.* 2003; 54, 11-14.
14. *DSM-IV. Diagnostic and Statistical Manual, APA, Washington 1993.*
15. Lindsay PH, Norman DA. *Procesy przetwarzania informacji u człowieka. Wprowadzenie do psychologii.* PWN, Warszawa 1991.
16. Tesak J. *Der aphasische Symptomencomplex von Carl Wernicke.* Idstein, Schulz-Kirchner. Germany 2005.
17. Graves RE. The legacy of the Wernicke-Lichtheim model. *J History Neurosci.* 1997; 6: 3-20.
18. Huber W, Poeck K, Weniger D. *Aphasie.* In: *Klinische Neuropsychologie.* Poeck K (ed.). Thieme, Stuttgart 1982.
19. Marczevska H, Osiejuk E. Nie tylko afazja... O zaburzeniach językowych w demencji Alzheimerera, demencji wielozawałowej i przy uszkodzeniach prawej półkuli mózgu. *Energeia, Warszawa 1994.*
20. Szepietowska EM, Daniluk B. *Demencja.* In: *Podstawy neuropsychologii klinicznej.* Domańska Ł, Borkowska AR (eds.). Wydawnictwo UMCS, Lublin 2011; 281.
21. Marchewka A, Dąbrowski Z, Żołądź JA. *Fizjologia starzenia się.* PWN, Warszawa 2013.
22. Duffy IR. *Apraxia of speech in degenerative neurologic disease.* *Aphasiology.* 2013; 20: 269-270.
23. Duffy JR. *Motor speech disorders: substrates, differential diagnosis, and management (third edition).* Elsevier, St. Louis, 2013.

24. Zapała J, Szuta M. Procesy starzenia w obrębie tkanek miękkich i kości twarzy ze szczególnym uwzględnieniem układu stomatognatycznego. In: *Fizjologia starzenia się*. Marchewka A, Dąbrowski Z, Żołądź JA (eds.). Warszawa 2012; 130-156.
25. Krajewska M. Ograniczenia i możliwości językowe osób z demencją a osób starzejących się fizjologicznie – analiza porównawcza. In: *Nowa Logopedia*. Tom 3. Diagnoza różnicowa zaburzeń komunikacji językowej. Michalik M, Siudak A, Orłowska-Popek Z (eds.). Collegium Columbinum, Kraków 2012; 472.
26. Wagner A. Rytm w mowie i języku w ujęciu wielowymiarowym. *Elipsa*, Warszawa 2017; 15.
27. Tłokiński W. *Mowa ludzi u schyłku życia*. Państw Wydaw Naukowe, Warszawa 1990.
28. American Psychiatric Association. *Diagnostic and Statistical Manual Disorders*, 4th ed. Washington, D.C. 1994.
29. Honig LS, Tang MX, Albert S, Costa R, Luchsinger J, Manly J, Stern Y, Mayeux R. Stroke and the risk of Alzheimer disease. *Arch Neurol*. 2003; 1707-1712.
30. Scott J, Schoenberg M. Memory and learning: the forgetful patient. In: *The Black Little Book of Neuropsychology*. Schoenberg MR, Scott JG (eds.). Springer, New York 2011; 179-200.

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