ORIGINAL ARTICLE

ACTA Vol. 8, No. 1, 2010, 38-50
NEUROPSYCHOLOGICA

Received: 03.11.2009
Accepted: 23.03.2010

A – Study Design
B – Data Collection
C – Statistical Analysis
D – Data Interpretation
E – Manuscript Preparation
F – Literature Search
G – Funds Collection

THE DIAGNOSIS AND THERAPY OF APHASIA IN THE ACUTE PHASE

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SUMMARY

Communication disorders, including aphasia. accompany central nervous system damage of various origin. Comprehensive rehabilitation – provided from the beginning of hospitalization, adjusted to the general state of health of patients and the actual functions disturbed, and carried out by a trained interdisciplinary team – significantly improves prognosis. Rehabilitation in the Neurosurgery Department of Military Hospital No 4 includes early assessment of language functions, as well as swallowing and speech disorder therapy. Many diagnostic methods and tests are used at this stage of aphasia, and serve as the basis for research, while also being standard procedures in clinical practice. The marked fluctuation of symptoms in this period makes it impossible to determine accurately the type and extent of aphasia or to differentiate between actual structural and functional sequelae resulting from the brain damage in the first weeks. This is due to the dynamic changes observed in this period. The role of early therapy has been emphasized in the literature. Gradual activation and stimulation of patients preceded by assessment of communicative abilities and combined with supporting the period of spontaneous remission are therefore essential at this stage. The program we present is used in everyday clinical practice, and includes an assessment of the verbal and non-verbal communicative abilities of patients following surgery due to central nervous system damage. Elements of the therapy are also presented.

Key words: *logopedics, Simons' diagnosis and therapy, SODA*

INTRODUCTION

Language is present in numerous areas of human life. As a consequence, it is absolutely necessary to be able to speak fluently. Since speech disorders particularly impede communication, the importance of effective diagnostic and therapeutic techniques addressing this condition cannot be overestimated. Communication disorders, in the form of aphasia, dysarthria or apraxia of speech, accompany various types of damage to the central nervous system, of vascular, neoplastic, traumatic or bacterial origin, as well as those caused by progressive degenerative disease or intoxication (Talar, 2002; Jodzio, 2003; Grabias, 1997; Pachalska, 2005; Herzyk, 2003).

According to Pachalska, aphasia can be defined as "an acquired disturbance or loss of verbal communication skills as a result of various types of organic damage to the brain areas of strategic importance for speech" (Pachalska, 2005) and "... a syndrome consisting in disintegration of information processing, i.e. impairment of the ability to decode and/or encode various non-verbal and/or verbal symbols functioning in a given language, culture or communication community as a result of organic damage to the central nervous system" (Pachaska, 2003). "Aphasia can concern various language modalities: not only speech, writing, reading and comprehension, but also construction and reception of encoded texts, e.g. using the Braille alphabet" (Pachalska, 1999).

The World Health Organization looks at aphasia as a condition resulting not only in disruption of the language system (i.e. impairment), but also loss of the ability to communicate and undertake purposeful actions, which leads to disability. As a consequence, the aphasia sufferer's ability to participate in social life becomes limited (handicap) (Pachalska, 1999; Troszczynska-Nakonieczna, 2008; Troszczynska-Nakonieczna et al., 2006).

Comprehensive rehabilitation provided from the beginning of hospitalization, adjusted to the general state of health of patients and the actual functions disturbed, and carried out by a trained interdisciplinary team, significantly improves prognosis. The effectiveness of therapy starting during the acute phase has been confirmed by thorough meta-analyses performed by Holland et al. (1996) and Robey et al. (1994). Other authors also advocate early treatment (Herzyk , 2003; Pachalska, 2003; Springer, 1986; Gordon, 1993; Caplan, 1993; Warlow, 1996; Simons, 1997; Prusinski, 1999; Tesak, 2001, Bley et al. 2002; Böhme, 2003; Kozubski & Liberski, 2004).

A number of diagnostic and therapeutic tools are available. Their use, however, requires appropriate professional knowledge, clinical experience and thorough preparation in speech therapy, neuropsychology, or neurolinguistics. Kadzielowa suggests that "it is necessary to determine the nature of diagnosis in order to clarify its basic goals" and differentiates between scientific and pragmatic goals, the latter concerning the patient himself (Kadzielawa, 1998).

It is crucial to know how to observe the patient in the early stage of therapy. Multiple techniques for assessment of aphasic patients during the acute phase (i.e. up to 6 weeks after the CNS injury) have been developed for the purposes of clinical practice.

The literature concerned with aphasia presents the following tests for assessing the dynamics of change in aphasia symptoms during the acute phase:

- Aachener Aphasie Bedside Test (AABT) (Biniek, 1993);
- An Aphasia Screening Test (Pachalska, 1999);
- Frenchay Aphasia Screening Test (FAST) – (Pachalska, 2005; Enderby, 1987; Bitniok, 1999);
- ScreeLing – Doesborgh (Deosborgh, 2003);
- ADAS scale (Troszczynska-Nakonieczna, 2008; Troszczynska-Nakonieczna et al., 2006).

Nevertheless, there are few research and diagnostic tools enabling evaluation of the communicative skills still possessed by the patient that would not be a burden to the patient in the limited and exceptional post-operative circumstances.

DIAGNOSIS AND THERAPY

Patients stay in the neurosurgery department for a short period of time, usually ranging from several days to 2-3 weeks. Due to the serious overall clinical status of the patients, neurological rehabilitation tends to be limited to perioperative physiotherapy and nursing activities aimed at preventing clinical complications. The physiotherapist is frequently the only person working with the patient after surgery.

The Neurosurgery Department at Military Hospital No 4 in Wrocław and the Neurology Department at the Medical University in Bydgoszcz use the ADAS scale (see Appendix 1) to assess the dynamics of changes in symptoms and the direction of symptomatic improvements. The speech disturbances diagnosed using the ADAS scale are summarised as ADAS X (A, B, C). The overall score is the sum of scores on speech comprehension, speech production and naming, i.e. ADAS X (A+B+C), which only enables the aphasia to be described according to the following scale:

- 0 – 0.5 – global aphasia
- 1 – 3.5 – severe aphasia
- 4 – 6.5 – moderate aphasia
- 7 – 8.5 – mild aphasia
- 9 – no features of aphasia

The letters A, B, and C indicate the type of speech disorder:

- A < 3 pt – sensory aphasia
- B < 3 pt – motor aphasia
- C < 3 pt – amnesic aphasia

Thus, for example, ADAS 0 (0, 0, 0) signifies global aphasia, while ADAS 3 (1, 1, 1) indicates severe mixed aphasia. The ADAS scale enables a quantitative assessment of aphasia.

The Simons test (Simons, 1997) is also used at the Neurosurgery Department. The author describes the acute phase of aphasia as a transient syndrome with specific characteristics associated with certain communication and language behaviors and ways of self-expression. The condition requires a special therapeutic approach, especially as regards language. Regardless of the diagnostic technique used, it is important that a tentative diagnosis assess not only verbal skills, but also verbal behaviors. The card (see Appendix 2) was designed for the Neurosurgery Department based on the concept of Professor Berthold Simons of the Neurology Clinic in Bad Salzhausen. Germany.

In the absence of contraindications related to the patient's clinical status and endurance, activation should be performed for 20-30 minutes every day (Bauer, 2001; Huber, 2000), or, according to Luczywek, once or several times a day for several (up to 15) minutes (Luczywek, 1978).

If speech production is absent or limited, techniques aimed at stimulating speech and language, counteracting inhibition, and eliminating blockage in nervous structures are recommended. On the other hand, therapy of uncontrolled, superfluous speech production with perseverations and jargon, as well as stereotype production of automatisms, should employ inhibitive techniques (Springer, 1986; Luczywek, 1978, Nowakowska, 1978). It is important to activate and stimulate language knowledge in order to restore function, i.e. support the process of spontaneous remission (Bley, 2002; Huber, 2000; Nowakowska, 1978; Glindemann, 2001) and prevent pathological phenomena, such as speech automatisms or perseverations, which lead to development of a circumlocutory strategy (Bley, 2002), telegraphic speech and psychogenic abnormalities (Luczywek, 1978).

Therapeutic programs currently indicated and used for acute aphasia include:

- Schuel (1964), Auditory Stimulation (Pachalska, 2003; Pachalska, 1999; Böhme, 2003);
- Naeser et al.(1986), Sentence-Level Auditory Comprehension (Pachalska, 2003; Pachalska, 1999; Böhme, 2003);
- Sparks (1986), Melodic Intonation Therapy (MIT) (Pachalska, 2003; Pachalska, 1999; Böhme, 2003);
- Helm-Estabooks & Ramsberger (1986), HELPSS (Pachalska, 2003; Pachalska, 1999; Böhme, 2003);
- Weigl (1961,1981), Deblokierungsmethode, (Böhme, 2003 for a full discussion, see also Pachalska, 2003; Pachalska, 1999);
- The stimulation methods of Luria and Tsvetkova's school of functional reorganization, presented by Nowakowska (Nowakowska, 1978);

- Strachalska (2002), Exercises to aid word recall in speech of aphasic patients (Strachalska, 2002);
- Simons (1997), Therapie akuter Aphasien. Bad Salzhausener Beiträge zur Aphasieforschung (Troszczyńska-Nakonieczna, 2008; Troszczyńska-Nakonieczna et al., 2006; Simons, 1997),
- Schnelle (2001), Zurück zur Sprache – zurück ins Leben. Bilder zur Kommunikation und Sprachtherapie bei Aphasie (Schnelle, 2001).

In the Neurosurgery Department at Military Hospital No 4 in Wrocław, the treatment of patients recovering consciousness focuses on the establishment of verbal or non-verbal contact and an attempt to assess their communicative skills using the above tools.

In some cases, attempts are made to apply the "Therapie Akuter Aphasien" (1997), "Zurück zur Sprache – Zurück ins Leben (2001)", and Strachalska's programme (Strachalska, 2002). The programs could be successfully employed even in patients with severe speech and comprehension deficits. However, their application was usually possible only if patients stayed in hospital for a longer term. In some cases, the programs accelerated the unblocking of skills and facilitated non-verbal communication.

CONCLUSIONS

Classification of acute aphasias as fluent or non-fluent indicates the presumable evolution of the condition towards motor or sensory aphasia (4, 34). The variability of symptoms during this phase makes it impossible to diagnose the type and scope of aphasia, or the actual structural and functional effects of the injury. At this stage, however, it is important to classify the patient's communicative abilities, evaluate the dynamics of disturbances, and gradually stimulate the patient. This is the only way, as has frequently been stressed in the literature, to find out which areas of speech skills need to be activated (Bley, 2002; Schnelle, 2001; Grohnfeldt, 1993).

The diagnostic work-up at this stage aims to establish the presence or absence of aphasic disturbances and differentiate between preserved language skills (speech), the ability to speak (motor skills), speech apraxia, dysarthria and dysphagia.

Patients should commence outpatient speech therapy as soon as they leave the hospital and attend at least 3 sessions of 45-60 minutes' duration a week. When their status has stabilized, about 90% of patients may be classified as aphasic e.g. using the Token Test (Huber, 2000).

The simplicity of the tools presented in this paper could support and encourage physiotherapists to cooperate with physicians in daily clinical practice with patients in the early phase of aphasia. Diagnostic findings should be included in the patient's medical record and serve as a source of information for therapists in other rehabilitation centers. This approach would ensure continuity of rehabilitation care and provide therapists with a basis for selecting

appropriate therapeutic techniques and programs. It is also essential to involve the patient's family in the therapeutic process.

A considerable problem is that Poland does not have a uniform organizational model of neurorehabilitation departments, while such models are in place in Western Europe and the US. Moreover, Polish hospitals have only a limited number of departments with an interdisciplinary team of specialists. This is due, among other factors, to the financial standing of the health care system. As a result, standards that are obligatory in old EU countries are not even partially complied with in Poland. Moreover, the current system does not take into account such factors as patients' disability, cost of their care and living or improvement in their quality of life.

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Appendix 1

APHASIA DYNAMICS ASSESSMENT SCALE (ADAS)

The ADAS scale is comprised of 3 parts, which evaluate respectively:
- speech comprehension – speech production – naming.

Examination model:

A. SPEECH COMPREHENSION - speech comprehension is examined by having the patient perform e.g.:

- simple tasks, e.g.:
  - *close your eyes*
  - *raise your hand*
  - *show me your tongue*
- complex tasks, e.g.:
  - *raise your hand and close your eyes*
  - *point to the window and the door*
  - *touch your knee, then your ear*
- tasks requiring comprehension of inflectional structures in sentences:
  - *touch your right ear with your left hand*
  - *point to the sheet with the key*
  - *point to the key with the sheet*
- selection of correct interpretation of well-known proverbs and metaphors e.g.:
  - *To have a heart of gold* means:
    - to be rich
    - to be very kind and helpful
    - to have golden implants in the heart

SPEECH COMPREHENSION SCORES

0 pts	- patient does not follow any orders
0.5 pts	- patient follows simple orders only if supported by a gesture
1 pts	- patient follows simple orders
1.5 pts	- patient follows some of the complex orders
2 pts	- patient follows all complex orders
2.5 pts	- patient follows orders requiring comprehension of inflectional structures in sentences
3 pts	- patient correctly interprets proverbs and metaphors

B. SPEECH PRODUCTION is examined by assessing:

- ability to provide personal data (first and last name, date of birth)
- automated word sequences: consecutive days of the week, months, counting to 10, prayers
- repeating simple words, sentences, numbers
- dialogue speech – responses to simple questions
- narrative speech, e.g. description of the circumstances of the injury

SPEECH PRODUCTION SCORES

0 pts	- patient does not utter any words, does not repeat, does not produce automated word sequences
0.5 pts	- patient utters isolated sounds or syllables
1 pts	- patient utters automated word sequences or single words
1.5 pts	- patient uses elliptical sentences; numerous paraphasias, agrammatisms
2 pts	- patient constructs simple sentences, predominantly uses telegraphic speech; speech is impoverished, frequently without names of activities, laconic; paraphasias and/or agrammatisms
2.5 pts	- patient constructs complex sentences to create e.g. a story; some paraphasias and/or agrammatisms
3 pts	- patient's utterances are complete and well-developed; no paraphasias or perseverations; correct selection of words

C. NAMING - the patient is asked to name indicated objects that (s)he is familiar with

NAMING SCORES

0 pts	- patient does not name or describe objects
0.5 pts	- patient does not name objects but can occasionally describe a familiar object
1 pts	- patient does not name objects but can describe them
1.5 pts	- patient names some everyday objects but cannot name some familiar objects
2 pts	- patient correctly names everyday objects but cannot remember names of rarely used objects
2.5 pts	- patient names familiar and less familiar objects, is occasionally unable to find the right word
3 pts	- patient correctly names all objects, is never unable to find the right word

Appendix 2

SPEECH THERAPY INTERVENTION CARD

Patient's name

Examiner **Admission date / Discharge date**

Town **Date and place of birth**

Native language **Date of accident/ injury**

Diagnosis

Level of consciousness

Paresis/ Paralysis

Handedness

Other

Recommendations for further care

COMMENTS:

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DATE: DAY _____

Symptoms – Simons concept

EXAMINATION OF LANGUAGE SKILLS IN ACUTE APHASIA (USLA)

Berthold Simons, Neurology Clinic, Bad Salzhausen

PREPARATION FOR THERAPY

LANGUAGE BEHAVIOUR

□ no response □ A.N.K.A.* □ partly verbal □ verbal

PATIENT'S LOAD TOLERANCE

□ 10 minutes □ 15 minutes □ 30 minutes □ _____ minutes

CONCOMITANT DYSFUNCTIONS

□ dysarthria □ dysphagia □ dysphonia □ right-/left paralysis/paresis

□ hemianopsia □ _____ □ _____

THERAPY CHANNELS

□ loud speech/conversation □ objects □ paper and pencil □ computer

PREPARATION FOR THERAPY

□ waking □ preparation □ suction □ _____

THERAPEUTIC APPROACH

□ only observation □ general language stimulation □ structured therapy

□ other _____

**A.N.K.A. – Allgemeines, nicht-sprachliches Kommunikations- und Ausdrucksverhalten* – non-verbal communication

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DATE: DAY

_____

EXAMINATION OF LANGUAGE SKILLS IN ACUTE APHASIA (USLA)

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VERBAL ACTIVITY

I. ESTABLISHMENT OF CONTACT

1. Does the patient establish eye contact? (e.g. during verbal contact, with the interlocutor in the field of vision)	□ YES	□ NO
2. Does the patient respond to greeting? (e.g. by moving, nodding)	□ YES	□ NO
3. Does the patient initiate greeting? (e.g. with a gesture, words)	□ YES	□ NO

II. RESPONSES TO QUESTIONS

4. Does the patient logically respond to YES/NO questions?	□ YES	□ NO
5. Does the patient respond to an **'or'** question? (e.g. „Are you drinking coffee **or** tea?", „ Are you eating cheese **or** sausage?"	□ YES	□ NO
6. Does the patient respond to factual questions using single words? (e.g. question about place of residence)	□ YES	□ NO

III. USE OF LANGUAGE

7. Does the patient follow orders? (e.g. "Sit down", "Move") □ YES □ NO

8. Can the patient give information about his/her symptoms?

□ no □ only in response to questions □ using general gestures and pointing

□ using single words □ in a detailed description

9. Does the patient talk to himself/herself? □ YES □ NO

10. Does the patient initiate verbal communication with others? □ YES □ NO

11. Does the patient engage in conversations with other patients from the same or other rooms? □ YES □ NO

12. Who visits the patient?

□ no visits □ relatives □ friends □ partner

□ colleagues □ legal persons

13. Does the patient shop in the hospital shop on his/her own? □ YES □ NO

14. Does the patient talk on the telephone? □ YES □ NO

15. How does the patient behave during visits?

□ no participation □ no contact □ does not speak but listens

□ speaks almost incomprehensibly □ some circumlocution but speech is partially comprehensible

□ little circumlocution □ no disturbances

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