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Disruption of Pragmatic Competence and Communication in Children and Adolescents with Congenital Corpus Collosum Disorder

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**DISRUPTION OF PRAGMATIC COMPETENCE
AND COMMUNICATION IN CHILDREN AND ADOLESCENTS
WITH CONGENITAL CORPUS CALLOSUM DISORDER**

Agenesis of corpus callosum (ACC) is congenital; the body of the corpus callosum of the brain has been undeveloped since birth. The corpus callosum is the largest neuron pathway in the brain, consisting of more than 200 million axons which form connections of the right and the left hemispheres of the brain. In agenesis of the corpus callosum the path can be completely or partially distorted.

Since 1992 Warren S. Brown Laboratory at Travis Institute (Fuller Graduate School of Psychology) has conducted cognitive and psychosocial studies on psycho-motor functioning of people with agenesis of the corpus callosum. This project involves people with ACC in intellectual standard. The research of W. Brown and the team has proved that the researched with ACC show deficits in three areas: neuronal - related to neuronal conduction between the hemispheres, cognitive, and psychosocial.¹ It was found that persons with ACC have difficulties in hand work coordination with tasks requiring involvement of both hands. Difficulties in the transmission of visual information from one hemisphere to the other, and problems with visual attention when changing the field of view

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¹ W. Brown, L.K. Paul, M. Symington, et al., *Comprehension of humour in primary ACC*, *Neuropsychology* 2005, 43, pp. 906–916.

are noticeable. Even if IQ measured with Wechsler scale is high, there was discrepancy between IQ, verbal and spatial tasks which were at lower level than in the researched without deficits of the corpus callosum. It is worth noting that children and school-age youth achieved basic skills in learning the language (e.g. reading, writing), while results in mathematical tasks performance were lower. Researchers explain this inter alia, because the reduction of information-processing speed between the hemispheres and difficulties in performing problematic tasks. The basis cognitive deficits associated with the lack of the corpus callosum include mainly pragmatic competence disorders such as, inter alia, problems with explaining and comprehension of secondary meanings in the language (comprehension of respectively proverbs, metaphors, some forms of humour and irony).

There is no evidence of problems with memory tasks. However, some problems can occur when the task requires complex operations on abstract materials.

The results of psychosocial abilities research have shown that persons with ACC often have difficulties in the interpretation of social signals and prediction of effects of their actions.²

It can be assumed, therefore, that the aforementioned difficulties in persons with ACC will also influence their problems in social communication, opening the research area for speech therapists and linguists.

Development disturbances of the corpus callosum are related to:

Agenesis of the corpus callosum (Latin: agensis corporis callosi) – ACC, AGCC – total absence of the corpus callosum.

Partial agensis of the corpus callosum (Latin: partial agensis of the corpus callosum) – concerns undeveloped rear part CC the most often.

Hypoplasia of the corpus callosum – poorly developed or deformed corpus callosum. In case of hypoplasia, CC fibres have thinner myelin layer or do not have myelin cover. Then they conduct nerve impulses more slowly, which also suggests slower cooperation between the hemispheres.

² L.K. Paul, B. Schieffer, W. Brown, *Social Processing Deficits in Agensis of the Corpus Callosum: narratives from the Thematic Apperception*, Archives of Clinical Neuropsychology 2004, 19, pp. 215–225; L.K. Paul, W. Brown, et al., *Agensis of the corpus callosum: genetic, developmental and functional aspects of connectivity*, “Nature Reviews Neuroscience” 2007, 8, pp. 287–299.

Language disorders in agenesis of the corpus callosum in intellectually disabled people are subtle and do not provide clear symptoms. However, Polish and foreign studies indicate that these subtleties in language performance and level of communication are similar to those with the right hemisphere damage.³

On the basis of neuropsychological and neurobiological research M. Klimkowski, A. Herzyk,⁴ A. Herzyk, D. Kadzielawa,⁵ G. Krasowicz-Kupis⁶ also drew attention to important contribution of the right hemispheric in shaping language processes.

According to M. Pałchalska,⁷ performance and efficiency of communication is disrupted due to the damage of the right hemisphere of the brain. The abilities relying on language and context data integration are disturbed. Pragmatic information processing disorders are associated with emotional disorders or spatial-visual disorders, and as a consequence lead to difficulties in receiving non-language information and interfere communication.

In conclusion, the right hemisphere plays an important role in the processing of complex language in activities such as: comprehension of and creating discourse, conclusions, integration of information, use of context, comprehension of ambiguous, metaphorical and emotional information, comprehension of jokes, comprehension of sarcastic expressions. It is important for the so-called theory of mind. It distinguishes grammatically correct sentences from grammatically incorrect sentences. It has been proven that people with disorders of the corpus callosum show the same language disorders as people with the damaged right hemisphere.⁸

³ B. Daniluk, A.R. Borkowska, A. Kaliszewska, *Selected aspects of social cognition in patient with complete agenesis of the corpus callosum and Arnolda-Chiari syndrome – case study*, “Polish Psychiatry” 2013, vol. XLVII, no. 3, pp. 519–530; M. Chiappedi, A. Fresca, J.M.C. Baschesis, *Complete Corpus Callosum Agenesis: can it be mild? Case reports in pediatrics*, ID 75271, 2012, pp.1–4.

⁴ M. Klimkowski, A. Herzyk, *Neuropsychological assessment – an overview of issues*, Lublin 1987; M. Klimkowski, A. Herzyk, *Clinical neuropsychology – selected issues*, Lublin 1994.

⁵ A. Herzyk, D. Kądziaława, *Disturbance in the functioning of the human from the perspective of clinical neuropsychology*, Lublin 1996.

⁶ G. Krasowicz-Kupis, *SLI and other language disorders*, Sopot 2012.

⁷ M. Pałchalska, *Clinical neuropsychology*, “Brain injury” 2012, vol. 2, Warsaw.

⁸ M. Senderecka, *Various points of view of the right and the left hemispheres of the brain*, “Psychological Review” 2007, vol. 50, no. 2, pp. 149–164.

1. Study

As indicated in Polish and foreign studies⁹, defects of the corpus callosum occur in 3 to 7 cases per 1,000 births, approximately 30 or 40% cases are identified. Other people in the group of 60% have not been involved in the research – due to apparently normal psycho-motor development.¹⁰ The author of this paper puts the hypothesis that among this 60% group, due to similar symptoms of language communication, confusing statements made without analysis of the documentation can occur (which particularly in case of dyslexia is common), according to which most pupils with the aforementioned clinical symptoms are diagnosed either as persons with development dyslexia or as persons with light intellectual disabilities (at upper limit standards) or persons with autistic spectrum.¹¹

The following were assessed and observed in the case of speech therapy: 45 patients: 20 girls and 25 boys at the age of 10–12 years attending comprehensive schools in Kielce. All persons participating in the research were diagnosed as children with dyslexia (30 children) or persons with light intellectual disabilities (15 children).

Methods and tools: observation, documents analysis. The tasks, according to which an observation of pupils' communication skills was performed concerned reading techniques, reading comprehension, dictation, copying, talk-

⁹ B. Daniluk, A.R. Borkowska, A. Kaliszewska, *Selected aspects of social cognition in patient with complete agenesis of the corpus callosum and Arnolda- Chiari syndrome – case study*, “Polish Psychiatry” 2013, vol. XLVII, no. 3, 2013, pp. 519–530; M. Chiappedi, A. Fresca, J.M.C. Baschiesi, op cit., s. 1–4; M. Lemka, E. Pilarska, J. Wierzba, A. Balarska, *Agenesis of the corpus callosum – clinical and genetic aspect*, Annales Academiae Medicae Gedanensis 2007, vol. 37; K. Nowak, A. Ogorzałek, *Agenesis of the corpus callosum*, [in:] *Biological development and speech disorders*, ed. M. Michalik, Krakow 2011, pp. 305–317.

¹⁰ M. Ciappedi, M. Bejor, *Corpus callosum agenesis and rehabilitative treatment*, “Italian Journal of Pediatrics” 2010, vol. 36, pp. 1–7; K. Nowak, A. Ogorzałek, *Agenesis of the corpus callosum*, [in:] *Biological development and speech disorders*, ed. M. Michalik, Krakow 2011, pp. 305–317.

¹¹ Quite interesting research on differential diagnosis between persons with ACC and autistic spectrum are presented in the article by L.K. Paul, B. Schieffer, W. Brown, *Social Processing Deficits in Agenesis of the Corpus Callosum: narratives from the Thematic Apperception Test*, Archives of Clinical Neuropsychology 2004, 19, pp. 215–225. The researchers proved that children with ACC in many behavioural and cognitive problems, especially in the area of focusing attention, show social problems, somatic disorders, mental problems, similar to problems of children with autistic spectrum. However, behavioural disorders are usually less severe than in persons with autism and Asperger's syndrome. The research confirms the need for careful differential diagnosis.

ing about texts with a complex plot structure¹². Moreover, the documents such as opinions from a psychological and educational clinic and medical documentation were analyzed.

A Polish studies parallel test¹³ was the main methodological tool, according to which I assessed the pupils' progress regarding acquisition of communication competences and language skills. The method and criteria in this test were borrowed from the diagnosing methodology of younger children^{14, 15}. However, I have changed the semantic material from a tale to a story and the channel of transferring information by children – from a spoken to a written answer, thus adjusting the contents and the text form to the ten-twelve-year old pupils' abilities and level. Then, analyzing the semantic and syntactic texts (written statements) written by pupils from IV–VI classes of primary school, I chose groups of pupils based on the mistakes made in their papers, here: dyslexia symptoms or other mistakes of interpretation character¹⁶. I backed up my observations with other tools, used in a speech therapy, such as: “A test for examining the speed and reading techniques” B. Rocławskiego (1998), „A scale of reading correctness”

¹² E. Boksa, *Diagnosis and monitoring of achievements of pupil with dyslexia with the paralel Polish studies test*, [in:] ed. A. Maciejewska, *Language communication disorders*, Siedlce 2005; G. Krasowicz, *Language, reading, dyslexia*, Lublin 1997; B. Bokus, *Creating stories for children*, Kielce 1991.

¹³ E. Boksa, *The Polish language teaching for dyslexic children*, Kielce 2004.

¹⁴ G. Krasowicz, *Language, reading, dyslexia*, Lublin 1997; B. Bokus, *Creating...*, Kielce 1991.

¹⁵ The studies presented by G. Krasowicz-Kupis concerned the analysis of syntactic and semantic structure of the texts produced by dyslectic children. The studies involved the pupils from II i III classes with a developmental dyslexia, and children at the same age without any learning difficulties were examined as control groups. In the above presented research two types of material, based on which a child produced statements of narrative character that included a text read by children (“Lis i Kozieł”, “Seven Dwarfs Find a House”) and pictorial anecdotes, were used. Regarding syntactic structure, G. Krasowicz-Kupis took into consideration the grammar means used by a child (types of sentences and their correctness, words and statements contents, the average length of statements, the proportion of complete and incomplete sentences, the proportion between types of single and complex statements). The semantic structure was described in two ways: as a reproduction of the superstructure scheme (a heroes identification, time location, space location, a basic action, a plot solution) and as a pupil's attitude to its informative contents. In order to do this, the authoress of “Language, reading and dyslexia” prepared a set of basic information points that guarantee a correct reproduction of the fairy tale's contents being read or a pictorial anecdote. She analyzed pupils' statements by comparing them with the basic information points. The findings of the G. Krasowicz-Kupis' research were clear-cut: dyslectic children at a younger school age produced poorer narrative statements in terms of contents and syntax.

¹⁶ G. Krasowicz (1997); B. Bokus (1991), E. Boksa (2004).

B. Zakrzewskiej (1996). Dyslectic pupils' compositions showed disturbed organization of the text and various content deformations of the presented readings. These phenomena did not develop in the individuals, who despite being diagnosed as dyslectic, showed different dysfunctions in communication competences. Based on the G. Krasowicz-Kupis' research findings, I performed my own observations and analyzed the pupils' narrative statements from IV–VI class of primary school, who had difficulties in “giving utter to words” and explaining behavior motivations of characters from a story indicated by me. I asked the individuals examined to carefully listen to a tale read by me, and present its contents in a written form. In my speech-therapy attempt I changed the form of the semantic pictorial tale and short text read independently by a child to a longer tale (a continuous text with no pictures) and a channel of the information transfer – from visual to aural. However, I kept semantic and syntactic assessment criteria of the narrative statement in the individuals under examination, including them in the Polish studies parallel test¹⁷. The task regarding pupil's sitting the test is as follows:

“I am going to read you an interesting tale entitled (...).” The teacher carefully reads the contents of the story.

“And now you – during this one lesson – will present its contents in a written form.”

A list of suggested stories that can be read out to the pupils by the teacher is presented below. The given texts come from the literary education textbook “An adventure with reading” (Boksa, Zbróg 2000–2006).

A ten and twelve-year-old child should easily write a tale about any topic, which was proven by the research of B. Bokus (1991). Producing this narrative form is one of the earliest and most creative forms of its activity. Development of the pupil's narrative competency falls between the second and seventh year of age. It is also assumed in the primary school curriculum that at the modular stage “the pupil produces tales about adventures of mythical characters and heroes invented by oneself”, and at the stage of class four “the pupil describes adventures of a literary hero, gives the contents of the works read”.

¹⁷ The Polish studies parallel test is a tool of my authorship developed for the needs of the screening test of dyslectic and non-dyslectic children in the IV–VI classes of primary school. A description of the test and the research procedure were published in my non-published doctoral dissertation. C.f. E. Boksa, Developing communicative competence dyslexic pupils in grades 4-6 elementary school in the framework of studies education, Warsaw 2011.

Therefore, the pupil should be familiar with simple narrative forms such as creative and reproductive tale at this education stage. For children with harmonious and normal cognitive functions development the story is the easiest form of tale. Tasks related to producing narrative forms are dealt with differently by children who suffer from different cognitive dysfunctions and they struggle with reading and writing, verbalizing their feelings and thoughts and giving free opinions on lots of topics in a spoken and written form from the very beginning of school education. Producing stories is one of many ways of showing communication and language competency. The tale is one of many varieties of narrative discourse, the presentation of some event depicted as a series of incidents or episodes, being the answer to the question: what happened, to whom, and when? As every longer form of expression it is entrenched by specific language, compositional and semantic rules. I have conducted the quality analysis between written expressions of dyslexic children and those with agenesis of the corpus callosum based on the tale by Małgorzata Musierowicz entitled "U nas też był Mikołaj".¹⁸ Dyslexic children improperly reproduced the basic elements of the text superstructure, but fairly well interpreted the tale by Małgorzata Musierowicz. They drew attention to the atmosphere of St. Nicholas day. Actually, there is other action in the stories of children with dyslexia and so is the subject of the work: compositional narrative dominant is constituted by the reputed grief of the family caused by poverty. Students with agenesis of the corpus callosum did not notice humor or comic situations in the creation of main characters. Students with agenesis of the corpus callosum who correctly indicated the basic elements of the superstructure such as: character identification, basic action, valence, presented the content of the foregoing tale too literally. Written expressions of dyslexic children and children with agenesis of the corpus callosum looked more like a summary, formed on the basis of the memory reproduction of the course of events. Although, students in both groups identified characters with ease, only the dyslexic students were able to explain the motives for characters' actions. Children with agenesis of the corpus callosum could not do it. The group of children with dyslexia did not demonstrate difficulties in identifying the time and place of the analyzed tale, which did occur with children with agenesis of the corpus callosum because the place of action was not clearly defined in the tale.

¹⁸ Earlier, I conducted similar comparative studies on a group of dyslexic and non-dyslexic children with a well developed corpus callosum. See E. Boksa (2007, 2011).

Both groups of children conducted a logical organization of the tale that they heard spoken and placement of events on the timeline. However, children with agenesis of the corpus callosum did have a problem with placing the events in the space. It should be noted that in the tale by Małgorzata Musierowicz, the time and place of the events were the delimiters of the beginning, St. Nicholas day is already suggested in the title of the tale, therefore the time and place that were to be identified when hearing to the text, and in accordance to the compositional rules of the story, should have been put at the beginning of their written expression.

In the Polish language education of the primary school student an important thing in the process of text analysis, not only a literary one, is the ability to identify from the sheer volume of given key messages information – in the case of the tale – the formation and solution of the plot. The main plan of action of each tale is diversified with various types of descriptions, narrator's explanations and thus secondary information. And this is the place where the difference between the stories of dyslexic students and students with agenesis of the corpus callosum is clearly visible. Dyslexic children colored their stories with descriptions and episodes, e.g. appearance of Santa Claus, description of the St. Nicholas gifts. Although, secondary points of information in dyslexic children were poorer in details or excessively complex and interfered with development of the action, the motivation of the characters' action and situational humor was recognized. Children with agenesis of the corpus callosum also demonstrated distortion of basic point of information. I have observed that in almost all cases. Children with agenesis of the corpus callosum did not understand neither the motivation of the main characters' actions nor the situational humor that was presented in the tale. Such distortions of the plot did not occur in the works of dyslexic children.

When performing a syntactic analysis of stories written by dyslexic children and children with agenesis of the corpus callosum it should be stated that in the case of the latter, the syntactic plane of narrative expressions is less diverse and complicated, which correlates with a semantically poorer side of the story. Syntax course of texts of children with agenesis of the corpus callosum was broken as a result of shortening the content of the tale. It is evidenced by the use of fewer number of words and sentences in the story. An important diagnostic point is also the fact that children were to write a reproductive story. Children with dyslexia could use the complete model of linguistic form of the tale. By comparing the volume of the stories between both groups, it can be stated that

children with dyslexia build texts from significantly shorter sentences, but they interpret characters' actions more precisely.

When analyzing the syntactic layer of the stories created by students with dyslexia and those with agenesis of the corpus callosum the similar tendency of not finishing already started sentences can be noticed e.g. "Welcoming sister", "When they woke up.", "When they were caught up with fear.", "They decided to give money.". Errors of this kind can be seen mainly in complex subordinate clauses or compound complex sentences. In these type of expressions the reason and the result of a given activity are determined. Thus, there is a conclusion put forward – the dyslectic pupils and pupils with agenesis of the corpus callosum have difficulties in reproducing the reason-result course of events, their logical connection in one plot sequence.

In dyslectic pupils' written works – as opposed to pupils with agenesis of the corpus callosum – there is a greater number of subordinate compound clauses in relation to coordinate compound clauses. It suggests problems with reproducing the reason-result course of events. Dyslectic children more often select forms (agreement, governing or adjunction) of the subordinate word to superordinate one, they correctly inflect some words, more rarely use one noun as an object of two verbs than children with agenesis of the corpus callosum do.

In order to fill the results of the Polish studies parallel test of the above mentioned pupils from two groups, I performed specialist research (regarding speed, technique and quality of reading).

a. The results from the reading speed and technique according to Bronisław Rocławski (1998) on the text "Warsaw" Text – 403 phonemes. The pupils from the dyslectic and control group reached levels from 1 to 4 – and they have difficulties in reading for sure. The pupils with agenesis of the corpus callosum were ranked at a level 7-10, they read out 403 phonemes within below 100 seconds.

b. A scale of reading assessment developed by B. Zakrzewska (1999).

In the group under examination I did not observe discrepancies between levels of reading quality – from reading deprived of any flaws to incorrect reading. Following the example of ten-degree scale of "reading assessment scale", the reading process of the pupils from the control group consisted in fluent reading syllable by syllable: with more difficult words, reading out syllables quietly and then loud saying of the whole word.

2. Results

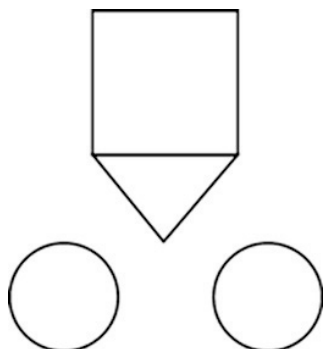
In the case of 5 children: 2 girls and 3 boys exhibited subtle differences at the level of communication and emotional signs indicating:

- impulsiveness, tendency to relieve tension externally,
- difficulties in scheduled thinking,
- low motivation to perform tasks.

The researcher's attention was drawn to: frequently changed subjects of conversation without giving any reason, the tendency to for finish dialogue and actions, digressions in expressions during telling short stories and no courtesy forms in conversation. The children read correctly new texts. However, they understood the content literally. They expressed thoughts with single sentences, quietly and with hesitation. While writing, they formed simple sentences forgetting the principles of using capital letters. Writing from listening involved numerous spelling and typing errors. They sometimes could not identify basic parts of speech. The skills of abstraction and casual thinking were mastered on average level.

Psychological research showed that visual perception, visually-operating coordination and visually-move learning speed were developed at the lowest level. Graphs-motor efficiency was reduced. The psychological examination test was used Bender-Koppitz.¹⁹ This test uses the relationship between psychological processes and disclosures organic changes in the nervous system of subjects. The task involved mapping the displayed drawing. These features include: the ability to see and recognize (reminder) of the pattern, understanding of the relationships between the elements of design and the ability to play these compounds motor skills (eye-hand coordination needed for writing) and the integration of all these functions. A large number of errors indicates a specific type of disturbance in the functioning of the brain. Test Bender-Koppitz examines the level of development of perception and coordination visual – motor in children from 5 to 8 years, and detects a delay that function in children over 8 years of age. It also allows a certain degree of maladjustment study emotional child. The test material is a 9 patterns of geometric figures, drawn on separate white cartons. The task of the child is another redrawing of these patterns on a sheet of paper A-4 format, at any time.

¹⁹ All children were subjected to psychological tests Bender-Koppitz before 8 years of life.



Example 1: The model to be copied

The primary field of application test Bender-Koppitz is prevention of school failure. As a test, „development” is used to evaluate school maturity children w the integration of perceptual-motor, it allows for early detection of deficits in this area and to prevent difficulties with reading, writing and counting in children starting school. Low score indicates a lack of maturity in terms of eye-hand coordination, cannot be said that the function of the lack of maturity most concerned about or whether it is rather a lack of integration. Remarkably weak result in the test may give rise to the hypothesis concerning organic damage or the so-called. minimal brain dysfunction - in conjunction with the data from the history of the child’s life, operation in various areas, as well as the results of other psychological tests. Hypotheses in this area can be formulated only on the basis of the whole diagnostic data about the normal development of intelligence²⁰.

The Bender-Koppitz test demonstrated indicators typical of organic damages of the central nervous system and signs emotionally indicating impulsiveness. Listening memory proved to be correctly developed. Clinical description of communication disorders in researched pupils required additional neurological research. Thus, apart from difficulties in reading and writing, the aforementioned pupils had problems in social learning. For polite parental consent, neurological data verification confirmed hypoplasia of the corpus collosum in the researched children.

²⁰ Supervision and interpretation of results in the test- Bender-Koppitz was made by the neuropsychologist K. Perz, WSZON Kielce, PSOUU Koło, Kielce.

3. Discussion

The aforementioned researches were not intended as statistical penetration. However, they show that in the therapeutic diagnosis process, it is necessary to observe the quality of language production of persons with ACC. This assessment is shown in the table below.

Table 1: Assessment of language tasks in the case of people with ACC

Criteria for assessing of pragmatic abilities	Qualitative assessment of pragmatic abilities in persons with ACC
Reading techniques	Correct Correctly read texts: with sentences or words, but slowly
Text comprehension	Correct literal meaning Disorders of metaphors and jokes comprehension, interpretation of actions of figures No empathy Unused context
Reproductive/ creative writing	Correct during rewriting Graphs-motor difficulties Writing summaries, lack of description and emotional involvement, attitude of text recipient to character is not disclosed Kept logical expression, i.e. sequence of events, but without summary and distinguishing the main theme of text/story.
Writing from listening	Numerous spelling, typing errors, perseveration of syllables and sounds
Social contacts/pragmatic language function	Emotional lability, poor social assessment, no empathy, low motivation to perform tasks
Prosody	distorted, monotonous, without emotion (bored) narration

The description of speech and language disorders in persons with disorder of the corpus callosum corresponds to the information on this subject included in Polish and foreign literature.²¹

On the basis of analysis of oral and written statements of people with defects of the corpus callosum, it is worth distinguishing specific symptoms of disorders on linguistic communication, which show damage or hypoplasia of the corpus callosum, inter alia:

- delayed speech development in the background of delayed psycho-motivon development in most cases,
- poor social assessment ability,
- reduction in distance in relation to strangers,
- difficulties in comprehension of mimic expression,
- no sense of humour,
- difficulties in speech planning,
- difficulties in capturing leading idea in reading and writing,
- difficulties in comprehension of moral,
- low motivation for language tasks,
- problems with extraction of words from semantic memory,
- deficits in comprehension of prosody.

4. Conclusions

1. Communication aims such as: expression of feelings, evaluating phenomena, creating reality, understanding expressions in language and situation context are ignored by persons with ACC.

²¹ B. Daniluk, A.R. Borkowska, A. Kaliszewska, *Selected aspects of social cognition in patient with complete agenesis of the corpus callosum and Arnolda-Chiari syndrome – case study*, Polish Psychiatry 2013, vol. XLVII, no. 3, pp. 519–530; M. Chiappedi, A. Fresca, J.M.C. Baschesis, *Complete...*, ID 75271, 2012, pp. 1–4; M. Ciappedi, M. Bejor, *Corpus...*, “Italian Journal of Pediatrics” 2010, vol. 36, pp. 1–7; W. Brown, L.K. Paul, M. Symington, et al., *Comprehension...*, pp. 906–916; L.K. Paul, B. Schieffer, W. Brown, *Social Processing...*, pp. 215–225; L.K. Paul, W. Brown, et al., *Agenesis...*, pp. 287–299.

2. Disruption of development of the corpus callosum should be combined with social and pragmatic learning.

3. Each child referred to as a child at risk of dyslexia before the age of eight years old should be tested by Bender-Koppitz. If the result is not compliant with the age, be a little patient referred for neurological studies towards structural or functional changes in the CNS. This will enable differential diagnosis, despite similar symptoms in the communication process to extract a group of dyslexic children from children with agenesis of the corpus callosum. This will allow the therapeutic process to plan appropriate speech therapy both for one group of children and other groups of children.

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Summary

In this paper, disorders of pragmatic competence in children with *agenesis or hypoplasia of the corpus collosum* will be discussed. The functional diagnosis of speech therapy should take into account the fact that presented symptoms and communication disturbance in patients with damaged or undeveloped corpus callosum correlate on a number of levels with language disorders, the basis of which is damage to the right hemisphere of the brain.

Keywords: communication, disorders of pragmatic competence, agenesis or hypoplasia of the corpus collosum

ZAKŁÓCENIA KOMPETENCJI PRAGMATYCZNEJ I KOMUNIKACYJNEJ U DZIECI I MŁODZIEŻY Z WADĄ CIAŁA MODZELOWATEGO

Streszczenie

W artykule omówione zostaną zaburzenia kompetencji pragmatycznej u dzieci z *agenezją lub hipoplazją ciała modzelowatego*. W funkcjonalnej diagnozie logopedycznej należy uwzględnić fakt, że przedstawione objawy zakłóceń komunikacyjnych u osób z uszkodzeniem lub niedorozwojem ciała modzelowatego korelują na wielu płaszczyznach z zaburzeniami komunikacji językowej, których podłoże stanowi uszkodzenie prawej półkuli mózgu.

Słowa kluczowe: komunikacja, zaburzenia kompetencji pragmatycznej i komunikacyjnej, agenezja i hipoplazja ciała modzelowatego