DOI: 10.1590/2317-1782/201420130021

Original Article

Artigo Original

Process of speech acquisition and development of autistic children with or without autistic regression

Trajetória de aquisição e desenvolvimento de fala de crianças autistas com e sem história de regressão autísticasion

Ana Carina Tamanaha[1]
Gislaine Mara Guerra Machado[1]
Carla Loebmann[1]
Jacy Perissinoto[1]

Keywords

Autism
Language
Communication
Autism Spectrum Disorders
Language Disorders

ABSTRACT

Purpose: To compare the trajectory of acquisition speech and development of autistic children with or without autistic regression. **Methods:** The sample consisted of 64 children, aged 3-10 years, of both genders, diagnosed by a multidisciplinary team with autism. In the analysis were investigated during the interview: mention whether or not the episode regression speech reported by parents; number of words produced in a minimum period of three months prior to detection of regression; mention whether or not the episode regression social behaviors concomitant arrest in speech, verbal and production at three years of age. We adopted a significance level of 5% for statistical analysis. **Results**: Thirty one percent of children had speech regression. These, 100% showed regression of social behaviors. Mean words produced before the detection regression were five. The groups did not show difference on the period of acquisition and development of speech. **Conclusions:** It was possible to compare the trajectory speech development of children with or without regression. And we did not find that the children affected by autistic regression period show more positive clinical outcome in relation to the production of speech.

Descritores

Autismo
Linguagem
Comunicação
Distúrbio do Espectro do Autismo
Transtorno de Linguagem

RESUMO

Objetivo: Comparar a trajetória de aquisição e desenvolvimento de fala de crianças autistas com e sem história de regressão autística. **Métodos:** A amostra foi constituída por 64 crianças autistas, de três a dez anos, de ambos os gêneros, diagnosticadas por equipe multidisciplinar. Foram investigadas na anamnese: menção ou não ao episódio de regressão de fala relatada pelos pais; número de palavras produzidas num período mínimo de três meses anterior à detecção da regressão; menção ou não a episódio de regressão de comportamentos sociais concomitantes à parada na fala; e a produção verbal aos três anos de idade. Adotou-se nível de significância de 5%. **Resultados:** Trinta e um por cento das crianças apresentaram menção à regressão. Destas, 100% também apresentaram perda de habilidades lúdicas e sociais. A média de palavras produzidas anteriormente à detecção de regressão foi cinco. Os grupos com e sem menção à regressão não diferiram quanto à trajetória de aquisição e desenvolvimento de fala. **Conclusões:** Foi possível comparar a trajetória de desenvolvimento de fala de crianças autistas com e sem história de regressão e verificar que as crianças acometidas por período de regressão autística não indicaram tendência de desfecho clínico mais positivo em relação à produção de fala.

Correspondence address:
Ana Carina Tamanaha
Rua Botucatu, 802, Vila Clementino, CEP: 04023-900, São Paulo (SP), Brasil.
E-mail: anacarinatamanaha@gmail.com

Received: 09/30/2013

Accepted: 04/15/2014

Study carried out at the Department of Speech-Language Pathology and Audiology, Universidade Federal de São Paulo – UNIFESP – São Paulo (SP), Brazil.
(1) Universidade Federal de São Paulo – UNIFESP – São Paulo (SP), Brazil.
Conflict of interests: nothing to declare.

INTRODUCTION

Some parents report a period of typical development followed by the loss of previously acquired skills among children with autism, especially regarding speech and social interaction. This is called autistic regression, and its prevalence ranges from 15 to 50%, depending on the criteria adopted to recognize such a condition among children who had been previously diagnosed with autism spectrum disorder[1,2].

An analysis about the subject indicated two ways to define regression: first, loss of five words that were used for interpersonal communication in a minimum period of 3 months, which precedes the recognition of regression, with or without loss in other areas, such as social interaction. The second way is characterized by no new acquisitions or word loss before the child was able to produce five words[2].

Autistic regression affects most children during the second year of life[2,3] and is strongly related to autism[1-4]. Several authors consider it to be a clear clinical manifestation only in the speech development of children in the autism spectrum. Baird et al.[2], for instance, defended that when there is not any neurological incidence, regression in children aged between 1 and 3 years should be a sign of alert for the identification of autism and a risk factor for developmental changes.

The causes of regression are unknown, and many studies have been carried out in search for neurological explanations[2,5,6]. Even though speech regression is the type of loss that calls the most attention, recent studies show that the concomitant loss in nonverbal communication skills, social interaction, and the act of playing is also a cause of concern[2,5–7].

Even though information about regression is usually given by the parents, therefore, being based on retrospective data and influenced by memory and its flaws, a study[7] concluded that parental information on language development and period of regression is very reliable.

Besides, many studies indicated that children with medical history of autistic regression presented more favorable speech development in comparison to children with autism with no history of regression[2,3,6].

OBJECTIVE

The objective of this paper was to compare the speech acquisition and development among children with autism with or without history of autistic regression.

Hypothesis

The hypothesis considered in this study is that speech development among children with autism with autistic regression is more favorable in comparison to that of children with no history of regression.

METHODS

This was a cross-sectional retrospective study, which was approved by the research ethics committee of the institution where it was conducted (CEP no. 0684/11). All of the parents or people in charge of the children were aware of the methodological procedures of the study and signed the informed consent, according to the research ethics committee. Besides, the Department of Speech Language Pathology and Audiology authorized the use of medical records of children who were no longer undergoing a speech language treatment.

Sample

The sample comprised 64 medical records of children aged from 3 to 10 years. There were 54 boys and 10 girls who were assessed by a multidisciplinary team, composed of a speech language pathologist, a psychologist, and a neurologist. They were diagnosed with autism according to the criteria from the International Classification of Diseases (ICD-10)[8] and the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR)[9]. This study was carried out at the Department of Speech Language Pathology and Audiology Investigation of Children and Adolescents — Global Developmental Disorders, in Universidade Federal de São Paulo, from March 2007 to March 2011.

All the children presented mild to moderate mental retardation at the psychological evaluation, which was confirmed by the Stanford–Binet Intelligence Scale[10,11].

The neurological evaluation included a clinical assessment and the analysis of tests, and the results were considered to be within normality standards by the neurologist, except for behavioral changes.

In the audiological evaluation, the hearing thresholds of all the participants were in accordance with normality standards.

Of the participants, 27 children were characterized as being nonverbal, because they mostly presented vocalizations to communicate during the study, and 37 were classified as verbal, because they produced verbal emissions that involved at least 75% of the phonemes in Brazilian Portuguese (BP)[12].

The inclusion criteria were multidisciplinary diagnosis of autism, age group, and whether or not episodes of autistic regression were mentioned in the speech language anamnesis. The exclusion criterion was the presence of comorbidities involving physical, motor, or sensory changes (hearing and/or visual) or association with syndromes.

Procedures

For the analysis of speech acquisition and development of children with autism, with or without history of autistic regression, the following were investigated during the anamnesis:

1. Episode of speech regression reported by parents or not. We considered speech arrest as an episode of regression when the children had already gone through a period of speech acquisition of at least five words; the chronological age of the children at the time the family noticed the regression was also registered.
2. Number of words produced by the child in a minimum period of 3 months before the regression reported or not.

It is important to mention that this study considered the production of at least five words, consisting at least 75% of the phonemes in BP, emitted systematically and appropriately with regard to context, as a parameter for verbal production.

3. Episode of regression concerning social behaviors and ludic exploration simultaneously to speech arrest reported or not. We considered the loss of social interaction skills and social behaviors (social smile, responsive behaviors to social demands), as well as the lack of interest for toys or group games that was previously observed/produced by the children.
4. Verbal performance of children at the age of 3 reported by the parents, after a period of regression, or not. The following criteria were taken into account for the analysis of verbal performance: nonverbal (vocalization, stuttering) and verbal (word production and/or sentences produced systematically).

As mentioned earlier, all the data were collected from the medical history of children, that is, from the initial interviews/anamnesis performed with the parents when the patient arrived at the service.

For the analysis of results, children were divided into two groups: children with regression and those without regression.

Statistical method

A 5% significance level was adopted for the analysis of results. The nonparametric Mann–Whitney and the χ^2-tests were used for data analysis.

RESULTS

Figure 1 shows the distribution of children (in percentage) with and without speech regression. Table 1 shows the mean age of speech acquisition in both groups.

Fifteen children in the group without regression were excluded from this analysis for having been classified as nonverbal; that is, according to their parents, they were incapable of producing words constituted of at least 75% of the phonemes in BP systematically[12].

Table 2 shows the distribution of the number of words and age of the children before the period of speech regression, in the group with regression.

All the children in the group with speech regression also presented references concerning the regression of social behaviors and ludic activities.

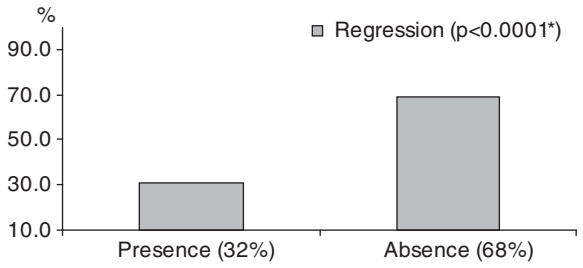
Table 3 shows the distribution of verbal performance at the age of 3 in both groups.

DISCUSSION

Autistic regression corresponds to a period of typical development followed by the loss of previously acquired skills, especially those related to speech and social interaction. It is strongly related to autism[1-4], and several authors consider it to be a clear clinical manifestation only in the development of children in the autism spectrum.

Therefore, the objective of this study was to compare the speech acquisition and development of children with autism with and without a history of autistic regression.

When the results were analyzed, we observed that the level of regression obtained in this study sample (31%) was similar to that mentioned by several analyses that pointed out that



*Statistical significance

Figure 1. Distribution of children (in percentage) with or without regression

Table 1. Mean age (in months) of speech acquisition in both groups

	Group		p-value
	Without regression	With regression	
n	29*	20	0.002
Mean	21.55	12.85	
Median	18	12	
Standard deviation	10.49	4.64	
Minimum	9	8	
Maximum	48	24	

*15 children were excluded from the group without regression for being considered as nonverbal

Table 2. Distribution of the number of words and age before regression in the group with regression

	n	Mean	Median	Standard deviation	Minimum	Maximum
Number of words	20.0	5.2	5.0	0.41	5.0	6.0
Age of regression (months)	20.0	24.0	24.0	8.43	9.0	36.0

Table 3. Verbal performance at the age of 3 in both groups

	Group				p-value
	Without regression		With regression		
	n	%	n	%	
Nonverbal	19.0	43.2	8.0	40.0	0.285
Verbal	25.0	56.8	12.0	60.0	

regression affects about 15 to 40% of the children diagnosed with autism[2,3,13].

We observed that the mean regarding speech acquisition was different between groups. Children with autism without regression produced their first words, in average, when they were 22 months old, whereas those with regression did so when they were 13 months old. Such significant difference confirmed that, in fact, the period of acquisition of communicative skills among children with regression is closer to normality standards, as described by many parents who underwent the anamnesis.

It is important to mention that 15 children were excluded from this stage of the analysis in the group without regression, once they were considered to be nonverbal, because they had never produced words that comprised at least 75% of the phonemes in BP[12] systematically and consistently, as reported by their parents.

We noticed that the mean age for the onset of regression was 24 months. We also observed that these children already produced an average of five words before the period of regression. The results corroborate the findings in literature[2-5,13-17], which shows that regression affects children with autism around the age of 24 months, after a period of speech acquisition of three to five words, produced systematically and in an appropriate context[6,7,13,14].

It is important to mention that all the children with speech regression also presented with loss of social skills and ludic activities, thus characterizing the episode as autistic regression, as described by many authors[1-7,13-17].

By comparing the development of children in both groups, we observed that at the age of 3, children with regression did not show the tendency of a more positive clinical outcome in relation to speech, that is, there were no more reports of speech production, in comparison to children without history of regression.

The results indicate that, even though the families reported the production of isolated words in the first year of life, in average, among children with regression, and the same for the second year of life in the group without regression, this did not ensure the speech development at the age of 3. At least four children in the group without regression, whose parents reported the emission of first words throughout the first 18 months of life, presented only with vocalizations at the age of 3, and this fact was stated by the same families. This probably happened because the initial productions were only stuttering.

It is important to mention that the absence of significant results may have been a result of the short time of recovery regarding the development of children affected by regression. Since the episode of regression occurred, in average, in the second year of life, at the age of 3 the children might not have had enough time to resume their speech development process.

Therefore, we suggest that more studies need be conducted after a longer period of development, for example, at the age of 5.

Study limitations

The period selected to analyze the speech development process of these children may be considered as a study limitation. Even though some studies have concluded that parental information related to retrospective data about the period of regression is very reliable, collecting these data can also be considered as a limitation.

CONCLUSION

It was possible to compare the process of speech acquisition and development among children with or without a history of autistic regression. We observed that those who were affected by a period of regression did not present the tendency for a more positive clinical outcome in relation to speech production.

**GMGM was in charge of data collection and tabulation; CL collaborated with collection and tabulation; ACT supervised data collection, collaborated with data analysis, and was in charge of the study design and general orientation of the stages of execution and elaboration of the manuscript; JP collaborated with data analysis, study design, and final elaboration of the manuscript.*

REFERENCES

1. Hansen RL, Ozonoff S, Krakowiak P, Angkustsiri K, Jones C, Deprey LJ, et al. Regression in autism: prevalence and associated factors in the CHARGE study. Ambul Pediatr. 2008;8(1):25-31.
2. Baird G, Charman T, Pickles A, Chandler S, Loucas T, Meldrum D, et al. Regression, developmental trajectory and associate problems in disorders in the autism spectrum: the SNAP study. J Autism Dev Disord. 2008;38(10):1827-36.
3. Pickles A, Simonoff E, Conti-Ramsden G, Falcaro M, Simkin Z, Charman T, et al. Loss of language in early development of autism and specific language impairment. J Child Psychol Psychiatry. 2009;50(7):843-52.
4. Ozonoff S, Heung K, Byrd R, Hansen R, Hertz-Picciotto I. The onset of autism: patterns of symptom emergence in the first years of life. Autism Res. 2008;1(6):320-8.
5. Moretti P, Peters SU, Del Gaudio D, Sahoo T, Hyland K, Bottiglieri T, et al. Brief report: austistic symptoms, developmental regression, mental retardation, epilepsy, and dyskinesias in CNS folate deficiency. J Autism Dev Disord. 2008;38(6):1170-7.
6. Meilleur AA, Fombonne E. Regression of language and non-language skills in pervasive developmental disorders. J Intellect Disabil Res. 2009;53(2):115-24.
7. Goldberg WA, Thorsen KL, Osann K, Spence MA. Use of home videotapes to confirm parental reports of regression in autism. J Autism Dev Disord. 2008;38(6):1136-46.
8. Organização Mundial de Saúde. Classificação Internacional de Doenças – CID-10. São Paulo: Edusp; 1998.
9. American Psychiatric Association. Manual diagnóstico e estatístico de transtornos mentais DSM-IV. Porto Alegre: Artes Médicas; 2005.
10. Thorndike RL, Hagen EP, Sattler JM. Stanford-Binet Intelligence Scale: Fourth edition. Technical manual. Chicago: Riverside Publishing Company; 1986.
11. Marteleto, MRF, Schoen-Ferreira TH, Chiari BM, Perissinoto J. Curvas de referência de pontos brutos no Stanford-Binet Intelligence Scale de crianças e adolescentes. Psico-USF, 2012;17(3):369-77.
12. Fernandes FDM. Autismo infantil: repensando o enfoque fonoaudiológico — aspectos funcionais da comunicação. São Paulo: Lovise; 1996.

13. Landa, RJ. Diagnosis of autism spectrum disorders in the first 3 years of life. Nat Clin Pract Neurol. 2008;4(3):138-47.
14. Jones LA, Campbell JM. Clinical characteristics associated with language regression for children with autism spectrum disorders. J Autism Dev Disord. 2010;40(1):54-62.
15. Tuchman R. CSWS-related autistic regression versus autistic regression without CSWS. Epilepsia. 2009;50(Suppl. 7):18-20.
16. Nizamie A, Sengupta U, Mishra BR, Praharaj SK, Nizamie SH. Role of early multimodal interventions in a case with autistic regression. Acta Neurol Taiwan. 2010;19(1):51-6.
17. Backes B. Regressão da linguagem, desenvolvimento sociocomunicativo e perfil sintomatológico de crianças com transtorno do espectro do autismo [tese]. Porto Alegre: Universidade Federal do Rio Grande do Sul; 2012. 97 fls.