Chapter 2

(CENTRAL) AUDITORY PROCESSING DISORDERS: ASSESSMENT, DIAGNOSIS, AND RE/HABILITATIVE APPROACHES

Ayşe Sanem ŞAHLI¹

Introduction

Auditory processing is a neurobiological activity in the central nervous system that is processed by the perceptual processing of auditory information and the formation of electrophysiological auditory potentials underneath. Similarly, the effectiveness and adequacy of auditory information used by the Central Nervous System. The inadequacy of neural processing of auditory information is defined as (Central) Auditory Processing Disorder or (C)APD (ASHA,2005).

(Central) Auditory Processing Disorders

The auditory processing disorder, which was first described by Myklebust as "auditory perception difficulty" for the first time in 1954, has had many names such as lack of auditory perception, central auditory dysfunction, central deafness (Lucker, 2007). The most recent use of the disorder is (Central) Auditory Processing Disorder (ASHA, 2005a).

The inadequacy and poor performance of one or more of the following skills in children and adults suggest (C) Auditory Processing Disorder (ASHA, 2005;Lucker, 2007);

- **a. Sound Localization and Lateralization:** The ability to know where the voice comes from and the ability to recognize the source of the voice.
 - **b. Auditory Discrimination:** The ability to distinguish one voice from another.
- **c. Auditory Pattern Recognation**: The ability to detect similarities and differences in voice patterns.

d. Temporal Aspects of Audition:

- Temporal masking: The ability to mask the weak phonemes before or after the strong phonemes. Masking of the auditory warning by the sound before or after it.
 - Temporal resolution: Detection of rapid changes in auditory signals.

¹Assoc. Prof. Hacettepe University, Vocational School of Health Services, Hearing and Speech Training Center, ssahli@hacettepe.edu.tr

Health Sciences Internal Sciences

These affect almost all of his life in a negative way. Some strategies that parents should pay attention to in the home environment are;

- Using short and simple commands
- Being positive and motivating
- Use visual clues or gestures to compensate for difficulties in listening
- Reviewing the course and school materials
- Reviewing the audio records together (Pierangelo&Jacoby, 1996).

Conclusion

Although the (Central) Auditory Processing Disorder is known as a highly complex dysfunction of the Central Hearing System, it is a disorder that can be taken under control if diagnosed early using the appropriate testing methods and if the life of the child/adult is arranged using the appropriate intervention strategies.

References

American National Standarts Institute(ANSI). Acoustical performance criteria design requirements and guidelines for schools. ANSI S12.60.New York: ANSI, 2002.

American Speech-Language-Hearing Association (ASHA). (Central) Auditory Processing Disorders, Working Group on Auditory Processing Disorders, Technical report, 2005.

American Speech-Language-Hearing Association (ASHA). Acoustics in educational settings: Position statement. Rockville, MD: Author, 2005b.

American Speech-Language-Hearing Association (ASHA). Guidelines for addressing acoustics in educational settings:Position statement.Rockville,MD:Author, 2005a.

Arnst JD. Presbycusis. In Katz J (ed.): A Handbook of Clinical Audiology, 3rd ed. Baltimore, Williams & Wilkins, 1985.

Bellis T.J. Assessment and management of central auditory processing disorders in the educational setting:From science to practice (2nd ed.)Clift on park, NY:Th omsan Learning, 2003.

Chang W, Keith RW. Chapter 17 - Central Auditory Processing Disorders. Assessment and Remediation, Neurotology (Second Edition), 2005:273–86.

Chermak GD, Musiek FE. Central Auditory Processing Disorders: New perspectives. New York, Singular, 1997.

Cooper JC, Gates GA. Hearing in the elderly: The Framingham cohort, 1983-1985, part II. Prevalence of central auditory processing disorders. Ear Hear. 1991;(12):304.

Darling RM, Sedgwick RM. Signs of auditory processing disorders in adults with a childhood history of otitis media. Paper presented a the annual; meeting of the American Academy of Audiology, San Antonio, TX, 2003.

Ferre J. Managing children's central auditory processing deficits in real world: What teachers and parents want to know. Seminars in Hearing, 2002.

Gang RP. The effects of age on the diagnostic utility of the rollover phenomena. J Speech Hear Disord. 1976;(41):63.

Geffner D. Central Auditory Processing Disorders. Definition, Description and Behaviors, Chapter 2, Geffner D, Ross-Swain D. Auditory Processing Disorders: Assessment, Management and Treatment, Plural Publishing, 2007a:24-48.

Geffner D. Management Strategies, Chapter 11, Geffner D, Ross-Swain D. Auditory Processing Disorders: Assessment, Management and Treatment, Plural Publishing, 2007b:207-29.

Jirsa RE, Clontz KB. Long latency auditory event-related potentials from children with auditory processing disorders. Ear Hear,1990 (11):222.

Jirsa RE. The clinical utility of the P3 AERP in children with auditory processing disorders. J Speech Hear Res. 1992;(35):903.

Health Sciences Internal Sciences

Johnson ML, Bellis TJ, Billiet C. Audiologic Assessment of (C)APD, Chapter 4, Geffner D, Ross-Swain D. Auditory Processing Disorders: Assessment, Management and Treatment, Plural Publishing, 2007:75–84.

Katz J. Central Auditory Processing Evaluation: A test Battery Approach, Chapter 27, Handbook of Clinical Audiology, Sixth Edition, Lippincott Williams Wilkins, 2009a.

Katz J. Management of Central Auditory Processing Disorders, Chapter 28, Handbook of Clinical Audiology, Sixth Edition, Lippincott Williams&Wilkins, 2009b.

Keith RW. Auditory processing disorders. In Roser R, Downs, M (eds.): Auditory Disorders in School Children: Law, Identification, Remediation, 4th ed. New York, Thieme Medical Publishers, 2004.

Keith RW. SCAN-A: A Test for Auditory Processing Disorders in Adolescence and Adults. San Antonio, Psychological Corporation, 1994.

Kelly DA. Parenting the Child with Auditory Processing Disorders, A Dynamic and Challenging Role, Chapter 12, Geffner, D., Ross-Swain, D., Auditory Processing Disorders: Assessment, Management and Treatment, Plural Publishing, 2007: 231-51.

Kricos PB, Lesner SA, Sandridge SA and et al. Perceived benefits of amplification as a function of central auditory status in the elderly. Ear Hear. 1978 (8):337.

Lucker RJ. History of Auditory Processing and Its Disorders in Children, Chapter 1, Geffner, D.,Ross-Swain, D., Auditory Processing Disorders: Assessment, Management and Treatment, Plural Publishing, 2007:3-24.

Michigan Speech-Language Guidelines, Auditory Processing Disorders, 2004, Avaliable from: http://www.misd.net/SEConsult/APD.pdf.

Pierangelo R, Jacoby R. Parents complete special education guide: Tips, techniques and materials for helping your child succeed in school and life. West Nyack, NY: The Center for Applied Research and Education, 1996.

Rodriguez GP, DiSarno NS, Hardiman CS. Central auditory processing in normal-hearing elderly adults. Audiology.1990;(29):85.

Şahlı AS. Auditory processing disorder in children: Definition, assessment and management, Journal of International Advanced Otology. 2009; (5)1:104–15.

Shirinian MJ, Arnst DJ. Pattern in the performance-intensity functions for phonetically balanced Word lists and synthetic sentences in aged listeners. Arch Otolaryngol. 1982; (108):15.

Stach BA, Spretnjak ML, Jerger J. The prevalence of central presbycusis in a clinical population. J AmAcad Audiol 1990;(1):109.

Stefanatos, GA, DeMarco, A.T. Central Auditory Processing Disorders, Encyclopedia of Human Behavior (Second Edition), 2012:441-53.