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More than Seizure: Central Auditory Dysfunction in children with Benign epilepsy with central-midtemporal spikes (BECTS) and Temporal lobe epilepsy: Is there a relation? A systematic review

Narmeen Sameer Tourman, Amenah Dab'e, Samar Khalidi.

Department of Audiology and Speech Pathology, Medical College at An-Najah National University, Nablus, Palestine.

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Background: Epilepsy is the most common childhood neurological disorder, which has various consequences on the life of the affected people. A few studies investigate these effects on the central auditory system.

Purpose: This systematic review aims to study the association between benign epilepsy with central-midtemporal spikes (Rolandic epilepsy) and Temporal lobe epilepsy and central auditory dysfunction/processing disorder (CAPD) in children.

Methods: A literature search in PubMed, Cochrane, Science Direct, and Google Scholar revealed thousands of articles, which were screened by two researchers. Studies examined different central auditory processes (CAP) through auditory behavioral tests such as speech audiometry, dichotic Speech tests Temporal Patterning Tests, speech recognition tests, and verbal memory were obtained and fully screened, behind these, many studies used neurological tests to evaluate neuronal activity. Studies that not used any auditory behavioral tests, as well as adult studies were excluded; since we concerned in children group who has a diagnosis of mesial or neocortical temporal lobe epilepsy, or benign Rolandic epilepsy. The quality of studies were assessed using The Joanna Briggs Institute (JBI) critical appraisal checklist for cross-sectional studies, and with

Correspondence concerning this article should be addressed to the mentioned authors at the mentioned institutes.

E-mail: research@admin.alquds.edu
Palestine, Abu Dis, Al-Quds University

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Newcastle-Ottawa Scale (NOS) for case-control studies. This systematic review was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA).

Results: 233 cases in 10 different studies were fully screened and reviewed, and their characteristics were summarized. An abnormal scores in the central auditory processing tests were observed in children with temporal lobe epilepsy and rolandic epilepsy, sometimes these abnormalities improved when neurological tests improved too (e,g: EEG) after antiepileptic drugs administration. On the other hand, some studies suggest that no causational relationship between CAPD and epileptic seizures, because CAPD was recorded even in cases with controlled seizures. Combining and analyzing the results revealed that it that if CAPD is not caused by seizures, it is at least not just caused by epileptic seizures.

Conclusion: Our review strongly suggest comorbidity between central auditory dysfunctions and benign (rolandic) epilepsy and temporal lobe epilepsy, however, the whole nature and causes of this comorbidity are not identified until today. The limited number of studies concerned with our issue was one of the major limitations of evidence behind reviewing different study designs. It is important for clinicians to understand the audiological consequences of childhood epilepsies; since it can help to make better treatment options in the future.

Keywords: temporal epilepsy, benign rolandic epilepsy, central auditory dysfunction.

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E-mail: research@admin.alquds.edu
Palestine, Abu Dis, Al-Quds University