Enlarged Vestibular Aqueduct and Cochlear Implants: The effect of early counseling on the length of time between candidacy and implantation

Katlyn Bostic, BS, Brianna Chai, BA, Rebecca Lewis, BS, Kosuke Kawai, ScD*, Juliana Manganella, BA, Margaret Kenna, MD/MPH*, Terrell A. Clark, PhD*
Boston Children’s Hospital; Department of Otolaryngology and Communication Enhancement
*Harvard Medical School

INTRODUCTION:

Enlarged vestibular aqueduct (EVA) is the most frequently identified anatomical abnormality in children with sensorineural hearing loss (1). The age at onset of hearing loss may range from birth to adolescence (2), but typically fluctuates or progresses to a profound degree by early childhood (3). Many patients with EVA eventually will be referred for consideration for cochlear implantation (CI). Efforts to limit the amount of time between reaching audiological candidacy criteria and decisions regarding surgery may benefit patients.

In a previous study (5), the mean length of time between reaching cochlear implant candidacy status and surgical implantation was reported as 6.3 months. The primary purpose of this study was to examine that interval (the length of time between reaching audiological criteria for candidacy for cochlear implantation and receiving cochlear implants) among children with a diagnosis of EVA who had surgery at this hospital. Two groups were compared; those children who began the clinical conversation about cochlear implants and the pre-surgical evaluation process before reaching candidacy criteria versus those who began the process after reaching candidacy criteria. This study also considered the primary mode of communication used by each participant. All participants in this study relied on audition and communicated with some competency in spoken language, emphasizing the need to regain access to auditory information as quickly as possible for this population of patients.

DISCUSSION OF RESULTS:

The mean length of time for all patients with EVA between reaching audiological candidacy criteria and cochlear implant surgery was 10.2 months (range: 3 days to 5.2 years) in the present study. However, based on the data collected, patients who began the implant evaluation process early saw a significantly reduced time between actually reaching candidacy and implantation (median = 3.1 months) than patients who began the evaluation process upon reaching candidacy (median = 5.8 months; p = 0.012).

Given the nature of the often sudden, irreversible decrease in hearing sensitivity found with many patients diagnosed with EVA, shortening the amount of time a patient spends without adequate access to auditorily presented language, most especially before cochlear implantation when the patient has historically relied upon such auditory access, is critical to ensure that the child regains access to auditory
information as quickly as possible. Auditory deprivation for an extended period of time may cause significant amount of stress on the child, due to the inability to communicate easily and effectively. The benefits of early evaluation for cochlear implantation in this population may not only improve the quality of life of patients, but also prepare patients for the eventual possibility of surgical intervention and subsequent aural habilitation therapy. The flow of necessary pre-implantation evaluations, studies, and counseling sessions proceeds more efficiently.

The findings of the current study suggest a shift in best practice when managing the EVA patient population in regards to cochlear implant evaluation timelines. In this population, discussion of cochlear implantation occurring before the patient reaches cochlear implant candidacy status can reduce the amount of time the child is without adequate auditory access once reaching audiological candidacy criteria.

Patients with EVA are at risk for potential delays in speech and language, socio-emotional, cognitive, and academic development. The impact of diagnosis of progressive hearing loss may carry implications for the family as well. While it is common clinical practice for a team of two, an audiologist and otolaryngologist, to support the needs of children with hearing loss, results of this study demonstrate the benefits of an interdisciplinary team approach to management. Patients at this hospital have access to an interdisciplinary team composed of professionals qualified to support the psychosocial, educational, and communication aspects of those affected by hearing loss. The interdisciplinary team’s ability to coordinate care and provide anticipatory guidance that encompasses the “whole” child and family may ultimately help minimize the obstacles and stress that can accompany the effects of progressive hearing loss on the child and family.

REFERENCES:


