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CONTRAINDICATION OF COCHLEAR IMPLANTS IN CHILDREN WITH AUDIOLOGIC INDICATION. WHEN AND WHY?

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Introduction:
Cochlear implantation (CI) in children has been performed within the public healthcare context in Brazil for several years. The success of the procedure related to auditory skills and oral language development, however, are worse than that observed in developed countries. The lack of standardized indication protocols that consider, besides the audiological evaluation, child's behavior issues and the family's difficulty in understanding the procedure and adhering to therapies may be considered. Some of these children, when subjected to cochlear implantation, may exhibit unsatisfactory results in language comprehension and, particularly, in language development.
It is possible that this lack of a more robust evaluation is negatively impacting the outcomes of pediatric patients who have been implanted, with only approximately 36% of implanted children under these conditions using oral language as their primary form of communication[1] in our community. Thus, over the past two years, we have reorganized a more comprehensive pre-CI evaluation program for pediatric patients to enhance each indication, not only from an audiological standpoint but also by analyzing the child's family socioeconomic status, the family's support network to manage multiple therapies, and the use of equipment involved in the language development of CI users, along with considering other neuropediatric diagnoses.
Objective:
To identify patients with audiological indications who were deemed unsuitable for the procedure and the reasons why.

Sample:
The sample comprised 211 pediatric patients under the age of 12, treated between January 2023 and December 2024 in Hospital de Clínicas de Porto Alegre, of which 46 had audiological indications for cochlear implantation.
Method:
This is a prospective cohort study involving a review of medical records and audiological examinations of these 211 patients, initially assessing whether they had an audiological indication for cochlear implantation. Subsequently, a more in-depth review was conducted, including consultations with speech therapy, social services, and psychology, to determine which of these patients were approved for cochlear implant surgery.
Other factors were also evaluated, such as age at the first consultation, cause of hearing loss, the duration in months between the first consultation and cochlear implant surgery, the type of language developed by the patient, and the reasons for not being considered suitable for CI. Additionally, we reviewed the city in the state of Rio Grande do Sul from which the patient originated, the distance from that city to the Hospital de Clínicas de Porto Alegre in kilometers, and the health macro-region of the public system to which the municipality belongs.

For patients deemed unfit, we created five categories to facilitate understanding:
Social: when, due to social issues, the family could not organize to attend to therapies or did not favorably position themselves for CI.
Technical: when anatomical issues prevented CI, such as malformations of the inner ear.
Follow-up: when during the evaluation process for CI, the patient lost follow-up and did not return for consultation.
Neurological: when neurological impairment would prevent language development even with CI.
Low adherence to pre-CI therapies: when there was a lack of family adherence or patient tolerance to the use of hearing aids and proposed additional therapies.
Results:
Among the 211 patients included in the sample group, 46 presented audiological indications for CI (21.8%); of these, 12 had CI contraindicated (26.1%), 29 (63%) were implanted, and 5 (10.9%) are still under evaluation.
The average age of implanted patients at the time of entering the clinic was 19.93 months, and the average time until CI surgery was 5.58 months. Of these 29 patients, 20 underwent bilateral CI (69%), 8 in the right ear, and 1 in the left ear. In comparison with suitable patients, the group deemed unsuitable for CI had an average age of 39.42 months.
The 12 patients considered unfit were categorized as follows: 3 for social reasons (25%), 2 for follow-up issues (16.7%), 2 for neurological reasons (16.7%), and 5 for low adherence to pre-CI therapies (41.6%). To date, none have been deemed unsuitable due to technical issues preventing CI.
Conclusions:
In performing CI, it is essential to consider much more than just the thresholds of hearing loss and the gain from hearing aid testing. First and foremost, involving a multidisciplinary team including speech therapists, psychologists, social workers, and guardians is crucial to assess the child's cognitive function, development, and family support system, as well as commitment and motivation[2]. These professionals are vital to evaluate barriers such as transportation, daily care, and bureaucratic issues that are important for a successful postoperative outcome[2].
Socioeconomic factors also significantly impact accessibility to CI, with studies showing that children in the public system experience delays in CI evaluation compared to those in supplementary health systems[3]. In our sample group, we observed a significant disparity in average age between patients who underwent CI and those who did not, with the former group arriving for evaluation at an average age of 1.5 years, while those who did not undergo implantation arrived at an average age of over 3 years.
Some patients, due to the regionalization of the unified healthcare system, are referred to smaller auditory centers that, upon realizing the child is not responding to hearing aid use, must redirect them through the basic health unit to a tertiary auditory rehabilitation service before proceeding with CI. This process can lead to delays, and by the time of presentation, the patient may already be at an age limit for the procedure.
Additionally, in the logistical organization of adherence to therapies and the use of hearing aids by children and their families, we found that it is not necessarily the most distant patients from our center who experienced the greatest difficulties; of the 8 patients deemed unsuitable due to low adherence or social issues, 50% were from the metropolitan region of the state. Among these, there are reports from parents in medical records corroborating difficulties in obtaining public transportation passes for consultations or accessing public benefits, along with challenges in caring for the rest of the family, especially in cases with multiple children.

We can also propose other hypotheses for low adherence, such as the lack of an adequate support network for caregivers responsible for the comprehensive care of therapies for children eligible for CI, while also needing to work to provide for their households, where they typically have other children.

Thus, we conclude that for the success of CI, not only a comprehensive audiological assessment is necessary, but also a thorough analysis of the socioeconomic context and the family support network of the child in question, through a multidisciplinary team comprising otolaryngologists, speech therapists, social workers, and psychologists. Furthermore, it is important to have an effective healthcare system, with early diagnosis and rapid referrals and counter-referrals, to prevent exceeding the age limits for assessment and eligibility for cochlear implantation.

Abstract:

Introduction: Cochlear implantation in children has been performed in the public healthcare system in Brazil for several years. The success of the procedure related to auditory skills and oral language development, however, are worse than that observed in developed countries. The lack of standardized indication protocols that considered, besides the audiological evaluation, child's behavior issues and the family's difficulty in understanding the procedure and adhering to therapies may be considered. These gaps may negatively impact outcomes in language comprehension and development, with only about 36% of implanted children using oral language as their primary form of communication in our population. In the last two years, a pre-cochlear implant evaluation program has been reorganized to improve indications, considering audiological, socioeconomic aspects, and pediatric neurological diagnoses. Objective: To identify patients with audiological indications who were deemed unsuitable for the procedure and the reasons why. Sample: The sample comprised 211 pediatric patients under the age of 12, treated between January 2023 and December 2024 in Hospital de Clínicas de Porto Alegre, of which 46 had audiological indications for cochlear implantation. Method: A prospective cohort study was conducted involving the review of medical records and audiological tests of the 211 patients, initially assessing their indication for cochlear implantation. Consultations with speech therapy, social services, and psychology were conducted to determine eligibility for surgery. Factors such as age at the first consultation, cause of hearing loss, and time until surgery were analyzed. Patients deemed unsuitable were categorized into five groups: social, technical, follow-up, neurological, and low adherence to therapies. Results: Of the 211 patients, 46 (21.8%) had an indication for cochlear implantation, with 12 (26.1%) contraindicated, 29 (63%) implanted, and 5 (10.9%) still under evaluation. The average age of implanted patients was 19.93 months, with an average time of 5.58 months until surgery. The 12 patients categorized as unsuitable were divided as follows: 3 due to social issues (25%), 2 for follow-up reasons (16.7%), 2 for neurological reasons (16.7%), and 5 for low adherence to pre-cochlear implant therapies (41.6%). Conclusions: Cochlear implant evaluation must consider more than just auditory thresholds, taking into account family support and socioeconomic barriers. A multidisciplinary team is essential to address cognitive aspects and family support, as well as logistical issues that influence the success of the procedure. Socioeconomic factors significantly impact accessibility to cochlear implants, with delays observed in public healthcare system children compared to those with supplementary healthcare coverage. The disparity in average age between implanted and unsuitable patients highlights the need for early diagnosis and prompt referrals to optimize outcomes. Thus, a comprehensive analysis of the socioeconomic context and family support network is critical for the success of cochlear implantation.

References:

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