



ORIGINAL ARTICLE

Comparative Study Between Unilateral and Bilateral Cochlear Implantation in Children of 1 and 2 Years of Age[☆]



Vicente Escorihuela García,* María Ignacia Pitarch Ribas, Ignacio Llópez Carratalá, Emilia Latorre Monteagudo, Antonio Morant Ventura, Jaime Marco Algarra

Servicio de Otorrinolaringología, Hospital Clínico Universitario de Valencia, Universidad de Valencia, Valencia, Spain

Received 8 May 2015; accepted 21 July 2015

KEYWORDS

Bilateral cochlear implant;
Sensorineural hearing loss;
Residual hearing;
Spoken language;
Children

Abstract

Introduction: The studies that have evaluated the effectiveness of bilateral cochlear implantation in children suggest an improvement in hearing about sound localisation and speech discrimination. In this paper we show the differences in audio-linguistic achievements with early bilateral cochlear implantation versus unilateral, and differences between simultaneous and sequential bilateral implantation.

Material and methods: We present 88 children with bilateral profound sensorineural hearing loss, treated with bilateral cochlear implantation in 32 cases and unilateral in 56 cases, during the first 12 months (27 children) of life and between 12 and 24 months (61 children). We conducted a statistical comparison of both groups in the audiometry, IT-Mais, Nottingham, LittlEars scales and verbal tests.

Results: No significant differences in hearing thresholds and questionnaires between unilateral and bilateral implantation were detected in either the first or second year. Verbal tests do show statistically significant differences: children with bilateral cochlear implant obtain 100% recognition of disyllabic and phrases within 2–3 years after implantation whilst children with one implant do not obtain those results at 5 years after surgery. No differences between simultaneous and sequential bilateral implantation were detected.

Conclusion: We emphasise the importance of ensuring good early audiological screening, to carry out an early and bilateral cochlear implantation with the consequent development of audio-language skills similar to normal hearing children.

© 2015 Elsevier España, S.L.U. and Sociedad Española de Otorrinolaringología y Cirugía de Cabeza y Cuello. All rights reserved.

[☆] Please cite this article as: Escorihuela García V, Pitarch Ribas MI, Llópez Carratalá I, Latorre Monteagudo E, Morant Ventura A, Marco Algarra J. Estudio comparativo entre implantación coclear uni y bilateral en niños de 1 y 2 años de edad. Acta Otorrinolaringol Esp. 2016;67:148–155.

* Corresponding author.

E-mail address: zingaro85@hotmail.com (V. Escorihuela García).

PALABRAS CLAVE

Implante coclear
bilateral;
Hipoacusia
neurosensorial;
Audición residual;
Lenguaje hablado;
Niños

Estudio comparativo entre implantación coclear uni y bilateral en niños de 1 y 2 años de edad**Resumen**

Introducción: Los estudios que han evaluado la efectividad de los implantes cocleares bilaterales en niños sugieren una mejoría de la capacidad auditiva en cuanto a la localización del sonido y la discriminación del lenguaje. En este trabajo mostramos las diferencias en los logros audio-lingüísticos con la implantación coclear bilateral precoz frente a la unilateral, así como las diferencias entre la implantación bilateral secuencial y simultánea.

Material y métodos: Presentamos 88 niños diagnosticados de hipoacusia neurosensorial profunda bilateral tratados mediante implantación coclear bilateral en 32 casos, y unilateral en 56 casos, durante los primeros 12 meses (27 niños) y entre los 12 y 24 meses (61 niños). Se compararon los resultados en la audiometría tonal, en las escalas IT-Mais, Nottingham y LittleEars, así como en las pruebas logaudiométricas.

Resultados: No se detectan diferencias significativas en los umbrales auditivos y en los cuestionarios IT-Mais, Nottingham y LittleEars entre los niños implantados bilateral y unilateralmente, tanto en el primer como en el segundo año. Las pruebas verbales sí que muestran diferencias estadísticamente significativas, ya que los niños con un implante coclear bilateral alcanzan antes el 100% en el reconocimiento de bisílabos y frases, sin que los niños con un solo implante lleguen a igualar dichos resultados a los 5 años de la cirugía. No existen diferencias entre implantación bilateral simultánea y secuencial.

Conclusión: Con este estudio remarcamos la importancia de asegurar un buen cribado audiológico precoz, para poder llevar a cabo una implantación coclear temprana, a ser posible bilateral, logrando así un desarrollo de las habilidades audio-lingüísticas equiparable al de los normooyentes.

© 2015 Elsevier España, S.L.U. y Sociedad Española de Otorrinolaringología y Cirugía de Cabeza y Cuello. Todos los derechos reservados.

Introduction

Prelingual type hearing impairment is when the hearing impairment occurs prior to the acquisition of language, i.e. before 2 years of age. Should this impairment be severe or profound, it will lead to serious repercussions in language development, which takes place up to the age of 5. Language is such a powerful tool that its dysfunction may negatively affect total cognitive economy. Restrictions predominantly occur in the development of oral communication. Without a good oral language base learning to read is profoundly hindered and without powerful language and reading ability thoughts cannot be expressed. The outcome will be inequality in social circumstances, in education, at work and also social isolation. Those affected by a prelingual type hearing impairment who undergo surgery, in this case with a cochlear implantation, are able to benefit from a wide range of benefits, outreaching mere hearing perception.

Overall evaluation of the long term outcome of cochlear implantation in a sample of children up to and including 6 years of age, reveals that most children are able to recognise the spoken word in an open context without the visual support of lip reading or gestures.¹⁻⁵ Results also suggest that children who were given implantations earlier, before the age of 3, have greater possibilities of dominating these skills and a better development of the spoken language.⁶⁻⁸ However, as implantation age goes beyond the critical period

when the auditory pathway is able to develop its greatest potential of flexibility and learning – usually approximately the first 5 or 6 years of age – results may suffer serious individual variations derived from medical factors and from the educational and physiotherapeutic attention the child receives following implantation.

We should also perform bilateral cochlear implantation on these prelingual hearing impairments, whether simultaneously or sequentially. The reasons for considering a second cochlear implantation include: the possibility of using the ear with better hearing, improving the localisation of sounds, avoiding head shade effect and improving word perception in noise, in addition to capturing a bilateral stimulation of the pathways and auditory centres during the period of the greatest neuroplasticity. One should recall that the auditory system is anatomically and functionally prepared to receive stimuli from outside from both ears under normal conditions. For this reason, intervention of the pathways and centres which comprise this system confer the binaural auditory perception with a series of advantages against monaural hearing.⁹

The aim of this paper is to evaluate the auditory and linguistic outcome obtained in children diagnosed with congenital hearing impairment and treated with a cochlear implant between the ages of one and two years, and to make a comparison of said outcome between those children who received bilateral implants and those who received unilateral implants.

Download English Version:

<https://daneshyari.com/en/article/4100618>

Download Persian Version:

<https://daneshyari.com/article/4100618>

[Daneshyari.com](https://daneshyari.com)