Hearing Function in Children with Chronic Renal Dysfunction

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Declaration

I, Jennifer Lau, hereby declare that this submission is my own original work and that the assistance which I have received is detailed in the Acknowledgements of this report. To the best of my knowledge and belief, it contains no material which has been accepted for the award of any other degree or diploma at any other university or other institute of higher learning, except where due acknowledgement has been made in the text. I am responsible for the study and conclusions reached.

_____ _____

JENNIFER LAU Date

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May God Bless You Always!

Abstract

The primary aim of the research was to describe hearing function in a group of children with chronic renal dysfunction receiving treatment in an academic hospital in Johannesburg, South Africa. Specific objectives in the study were to determine the prevalence of hearing loss in paediatric patients with chronic renal dysfunction; to describe the type, degree and configuration of the hearing loss; and to establish if there was a relationship between the presenting hearing loss and the severity of renal dysfunction, the different treatment regimens, duration of renal dysfunction, and the duration of treatment.

One hundred children between the ages five -18 years participated in the study and comprised 65 males and 35 females. The mean age of the participants was 11.68 years.

A cross-sectional, descriptive, quantitative research design was employed. All participants underwent a case history interview and a full audiological examination which included an otoscopic examination, immittance testing (tympanometry and ipsilateral acoustic reflex testing), pure tone audiometry including extended high frequency testing up to 16 kilohertz as well as diagnostic distortion product otoacoustic emission testing. A record review was also done.

Both descriptive and inferential statistics were used to analyse the collected data. Inferential statistics included parametric measures using multiple regression measures as well as non parametric measures using the Kruskal-Wallis statistical analysis.

Results revealed that there was a high prevalence of hearing loss in children with chronic renal dysfunction. Results from the extended high frequency pure tone testing as well as the diagnostic distortion product testing revealed that the most common hearing loss was a low and high to ultrahigh frequency mild sensorineural hearing loss. The study showed that there was no relationship between the severity of hearing loss and the severity of renal dysfunction, or the duration of renal dysfunction and the duration of treatment. However, the study showed that there was a relationship between the severity of hearing loss and certain treatments, that is,

haemodialysis and the use of ototoxic medication such as loop diuretics, tuberculosis medication, and antimalarial medication.

As the potential to miss hearing loss in this population is high, the research highlighted the importance of extended high frequency audiometry as well as diagnostic distortion product otoacoustic emission testing for the use of ototoxic monitoring in patients with chronic renal dysfunction. The research also highlighted the need for further research in this area as well as the need for educating medical personnel and caregivers working with children with chronic renal disease.

Key words: chronic renal dysfunction; hearing loss; distortion product; otoacoustic emissions; extended high frequency audiometry.

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