Impact of Implantation on Anxiety and Depression in Mothers of Children under Cochlear Implant

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Received September 2010, Revised and accepted November 2010

Abstract

Objective: The aim of our study is to determine the impact of cochlear implantation on anxiety and depression in mothers of children with cochlear implant.

Materials and methods: In a Cohort design, 35 mothers of deaf children with cochlear implantion admitted to the clinic of Baqiyatallah hospital during January 2008 – January 2010 were selected through systematic sampling. Information of demography, depression and anxiety are obtained from the parents by checklist and beck questionnaires, respectively.

Results: Mean depression and anxiety scores in cochlear implant candidates were more than cochlear implant recipients. The difference was significant in depression and anxiety (P=0.001).

Conclusion: It seems that cochlear implant use leads to decrease of depression and anxiety but still high prevalence of these complications than the normal population.

Keywords: Depression, Anxiety, Cochlear implant, Parents

Introduction

Cochlear implants give deaf and profoundly hearing–impaired persons improvement in the ability to participate more actively in an environmental where sound is the most important factor for communication. The audiological benefit, usually measured with sentence tests, environmental sounds, and monosyllables, is demonstrated by the enhancement in open set word recognition as result of implantation (1, 2).

Clinical trials have traditionally focused on the direct effect of a treatment; in cochlear implant recipients, that means sound and speech perception and little empirical attention have been paid to other questions, in particular, the psychological adaption of the child and family prior to and following implant surgery (3). It seems that cochlear implant use leads to decrease of depression and anxiety in patients, however there is a little data about the parents.

Some studies showed that parents of children with intellectual disabilities are known to have higher child –related stress than parents of normal developing children (4, 5). It was assumed that the stress of caring for a child with a profound developmental delay places mothers at risk of suffering from depression. Also, depression and anxiety impact on quality of life in mothers of children with different disabilities (6, 7).

With regard to beneficial effect of cochlear implants on clinical and psychological presentation in patients it is possible that the implant device reduce the degree

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Table 1: Demographic and clinical characteristics of mothers with implantation children

Characteristics	
Age	Mean ± SD (range)
Mother	29.42 ± 4.39 (22–38)
Child	1.5 ± 0.55 (1–3)
Patient's gender	n (%)
Female	16 (45.7)
Male	19 (54.3)
Education	n (%)
High school or above	20 (57.1)
Mid school or lower	15 (43.9)
Number of siblings	n (%)
1	11 (31.4)
2	20 (57.1)
4	4 (11.4)

of anxiety and depression of the whole family.

The aim of our study was to determine the impact of cochlear implant on anxiety and depression in mothers of children with cochlear implant.

Material and Methods

In a prospective design, 35 mothers of deaf children admitted to the Cochlear implantation Clinic of Baqiyatallah Hospital during January 2008 – January 2010 were selected through systematic sampling. The inclusion criteria were set as having a child with deaf and candidate for cochlear implants, living with him or her, absence of severe or chronic medical conditions (e.g., stroke, diabetes mellitus, and hypertension), absence of a history of psychological disorder and absence of application to clinic for any kind of medical support within the last 3–months. The study was approved by the in–house Ethics Committee of Baqiyatallah Hospital, and informed consent was obtained from all subjects.

Information on age of children (measured by month) and mothers (measured by age), enrollment in early interventions program, ethnicity, parents' education level and income are obtained from the parents.

Beck Depression Inventory II (Persian Translation) was used to assess the level of depression in participants. It is 21 items self administered instrument and rated on 4–point scale ranging from 0–3. Beck Depression Inventory has a cut–off score of 14, with the range of 14–19 for mild depression, 20–28 for moderate depression and 29–63 for severe depression (8–10).

Beck Anxiety Inventory was used to assess the level of anxiety in patients. It is a 21 items inventory rated on 4–point scale ranging from 0–3. Beck Anxiety Inventory has a cut–off score of 8, with the range of 8–15 for mild anxiety, 16–25 for moderate anxiety and 26–63 for severe anxiety. These tests were completed by participations before cochlear implant. All children receiving cochlear implant were routinely followed after implant surgery at 3–6 months intervals over the first year and the questionnaires were completed again 12 months after the date of children cochlear implantation.

Statistical analyses were performed using SPSS version 16 for Windows. Qualitative variables were defined with relative frequency and tables of frequency, and quantitative variables with mean and standard deviation. Mean values were compared with paired sample t–test and evaluation. The differences in prevalence rates were tested by χ2–test and $P<0.05$ was set as statistical significance.

Results

The mean age of children with cochlear implant were 1.5 (range 1–3) years, and the mean age of mothers' were 29.42 (22–38). The demographic and clinical characteristics of the mothers are depicted in table 1.

According to the Beck Depression Inventory II (Persian Translation), the mean of depression scores before implantation was 18.94 ± 8.95 that these score after implantation was 13.14 ± 8.99, and at after implantation the depression was significant better compared to the before implantation (P=0.001) (Table 2).

Also, there were differences between the groups of depression (mild, moderate, severe) before and after implantation. Level of depression decrease in all groups, significantly. A high prevalence of Depression was seen amongst all the participants with 23 (65.71%) out of the 35 patients assessed as depressed, And after implantation this prevalence was 12 (34.28%). Table 3 shows these results.

According to the Beck Anxiety Inventory (Persian Translation), the mean of anxiety scores before implantation was 15.65 ± 10.29 that these score after implantation was 10.48 ± 8.91, and at after implantation the anxiety was significant better compared to the before implantation (P=0.001) (Table 2).

Also, there were differences between the groups of anxiety (mild, moderate, severe) before and after implantation. Level of anxiety decrease in all groups, significantly. A high prevalence of anxiety was seen amongst all the participants with 28 (80%) out of the

Table 2: Prevalence of anxiety and depression before and after implantation

	Mean	SD	*P*–Value
Depression			0.001
Before implantation	18.94	6.99	
After implantation	13.14	8.99	
Anxiety			0.001
Before implantation	15.65	10.29	
After implantation	10.48	8.91	

35 patients assessed as anxieties and after implantation this prevalence was 19 (54.28%). Table 3 shows these results.

Discussion

In this study, found that implantation of cochlear on children significantly decreased depression and anxiety in mothers. In the present study there was higher prevalence of anxiety and depression before implanttation as compared to after implantation. It seems that cochlear implant use leads to decrease of depression and anxiety in mothers with cochlear implant.

In this study, prevalence of anxiety and depression were seen amongst all the participants with 80% and 65.71% before implantation, and were seen 54.28% and 34.28% after implantation, respectively. Although, these finding shows decrease the prevalence of anxiety and depression after implantation but this prevalence is high. Studies showed that, Anxiety disorders and depression are the most frequent mental disorders in general population. Women are affected more frequently than men. Lifetime prevalence rates differ depending on how anxiety or depression are defined and assessed. In large population studies, prevalence of depression ranges from 2.6 to 12.7% in men, and 2.5 to 21% in women, respectively (11–15).

Parents of children with deaf are known to have higher child–related stress than parents of normally developing children. It was assumed that the stress of caring for a child with a profound hearing loss places mothers at risk of suffering from depression and on the other hand, a maternal anxiety disorder or depression may negatively effect the development of their children. Parental reactions such as distress and denial can reduce the speed with which intervention services are initiated after identification of deafness. Reduced parental involvement due to poor emotional functioning can have an adverse effect on the deaf child's cognitive and socio–emotional development (16–17).

This study also highlights the importance of the simultaneous management of Anxiety and Depression in mothers of children with cochlear implant. Thus cochlear implant centers must devise and implement the multidisciplinary approach for treatment and follow up services of parents of child patients. There is a need for specific assessment of wellbeing in mothers of children with cochlear implant.

This study had small sample size which was elected through non Probable Sampling technique. Despite Beck's questionnaire validity, it seems that it is affec-

Table 3: Level of anxiety and depression in mothers before and after cochlear implantation in their children

.....	Before	After	*P*–Value
Depression			0.001
Without depression	12	23	
Mild depression	7	5	
Moderate depression	10	5	
Severe depression	6	2	
Anxiety			0.001
Without anxiety	7	16	
Mild anxiety	16	10	
Moderate anxiety	7	7	
Severe anxiety	5	2	

ted by the motivation of response in subjects.

The presence of Anxiety and Depression among substantial number of cases necessitates the psychological screening. Any way, this study shows that although implanting can be effect on depression and anxiety is mothers, but still high prevalence of these complications than the normal population.

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