Quality of Life in Children with Recurrent Acute Otitis Media in Southwestern of Iran

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Abstract Otitis media (OM) is one of the most common disorders in childhood and may have a considerable impact on quality of life and functional health status of children. The aim of the study was to assess the quality of life in children with recurrent acute otitis media before and after the treatment by using a questionnaire. A multicentre survey base study. This study was conducted at Imam Khomeini and Apadana Hospitals in the southwestern region of Iran between Sep 2008 and March 2009. Regardless of primary complaint, all patients completed a demographic, health-related quality of life (HRQoL) and OM-6 surveys. A total of 246 patients included in this study. The mean age of patients in this study was 2.62 years. One month follow-up questionnaires were obtained from 180 patients for a 73.17% response rate, and 12 weeks follow-up questionnaires were obtained from 150 patients for a 61.38% response rate. The children with recurrent AOM had poorer scores t. Quality of life of children with three or more episodes of AOM in the preceding year was poorer than that of children with 2–3 episodes.

Keywords Otitis media · Recurrent · Quality of life · Children

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Introduction

Acute otitis media (AOM) is one of the most common diseases in early infancy and childhood and a leading cause of healthcare visits and antibiotic prescriptions [1, 3]. Recurrent AOM is frequent and ≥ 3 episodes by 1 year of age have been reported in 10–19% of children [2, 5]. In average, a child will experience four AOM episodes during the first 6 years of life (3). Children with AOM also disrupt daily activities of their parents [4, 5]. Quality of life (QOL) has recently become accepted as a standard for overall policy evaluation of interventions. Because it is impossible to directly assess the feelings of children, parental reports are used as a surrogate measure of their child's QOL [6–8].

The aim of the study was to assess the quality of life in children with recurrent acute otitis media by using a questionnaire designed to measure the severity of AOM before and after treatment.

Patients and Methods

Study Design and Population

This is a multicentre survey base study evaluating the severity of AOM before and after treatment at Imam Khomeini and Apadana Hospitals in the southwestern region of Iran between Sep 2008 and March 2009.

Data Collection

Regardless of primary complaint, all patients completed a demographic, health-related quality of life (HRQoL) and OM-6 surveys. The study was approved by the Ahvaz

Jundishapur University of Medical Sciences Ethics Committees and all subjects and their guardians in case of children, granted informed consent to participate. Questions were asked regarding the occurrence of AOM using a standard definition. Quality of life domains concern clinical manifestations include sleeping problem, physical suffering, activity limitations, appetite, and hearing loss. Participation was voluntary and no incentives were given.

Methods

A total of 246 children included in this study, were followed up from beginning of the study to 12 weeks after treatment. So the study population divided to three groups according to the follow up time course, include A, before treatment, B, 4 weeks after the treatment, C, 12 weeks after the treatment. For treatment proposes amoxicillin (50 mg/kg/day to 100 mg/kg/day) divided trice per day has been given for 10 days started from the first day of admission.

Statistical Analysis

SPSS version 13.0 (SPSS Inc., Chicago, IL, USA) was used to assess the significance values. The results and scores presented by values. The difference between beginning of the study and 4 and 12-week after treatments has compared using Chi square test. *P* values less than 0.05 consider as significant.

Results

Between September and March 2009, 246 children met the inclusion criteria and were recruited to participate in the study. Parents of children with otitis media completed the questionnaires (five items, four score). Quality of life domains concern sleeping problem, physical suffering, Activity limitations, appetite, hearing loss (Table 1). The 'global quality of life' rating is performed on a 5-point score. The questionnaires are completed after the first visit to the ear, nose and throat surgeon and 1 month after treatment (Table 2). The last step is scheduled 12 weeks after the treatment (Table 2). The mean age of patients in this study was 2.62 years. One month follow-up questionnaires were obtained from 180 patients for a 73.17% return rate, and 12 weeks follow-up questionnaires were obtained from 150 patients for a 61.38% return rate. Assessment of clinical improvement and quality of life before and after treatment of acute otitis media was seen in Table 3.

All the severity scores 4 and 12-week after treatments were shown improvement in comparison to before treatment, in such way that the major improvement has seen in case of the sleeping problem (2.28 → 1.51 → 1) and physical suffering (2.21 → 1.58 → 1) followed by other scores (Table 2). The severity score between beginning of the study and 4 and 12-week after treatments were compared, which revealed that in case of the sleeping problem and physical suffering the difference were statistically significant in 4-weeks and highly significant after 12-weeks, while for activity limitations the difference was

Table 1 Items used to measure impact of AOM episode on the QOL of children symptoms items

Sleeping	Lack of sleep, difficulty waking up.
Physical suffering	Pain and discomfort in the ear, draining ear, fever.
Activity limitations	Limitations in activities (playing less, doing fewer things with friends/family, not going to school or daycare).
Appetite	Loss of appetite or nausea.
Hearing	Loss hearing loss, Delayed speech

Table 2 Comparison of the severity scores before treatment with 4 and 12-week after treatment (n = 150)

Disease severity Variables	No problem (0)			Mild problem (1)			Moderate problem (2)			Sever problem (3)			Score		
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Sleeping problem	18	121	131	33	16	16	29	11	3	70	2	0	2.28	1.51	1
Physical suffering	3	126	141	34	13	9	48	8	0	65	3	0	2.21	1.58	1
Activity limitations	22	131	130	38	12	16	57	6	4	33	1	0	1.96	1.42	1.20
Appetite	11	126	127	29	18	18	61	5	4	49	1	1	2.14	1.29	1.26
Hearing loss	41	120	119	33	18	22	38	8	6	38	4	3	2.04	1.53	1.38
Total															

A, before treatment; B, 4 weeks after the treatment; C, 12 weeks after the treatment

Table 3 Assessment of clinical improvement and quality of life before and after treatment of acute otitis media by scoring the results

Disease severity Variables	Score	
	P1	P2
Sleeping problem	0.0483	0.0018
Physical suffering	0.0451	0.0017
Activity limitations	0.0519	0.0531
Appetite	0.0398	0.0423
Hearing loss	0.0591	0.0467

P1, *P* value between before treatment and 4 weeks after the treatment; P2, P1; *P* value between before treatment and 12 weeks after the treatment

not significant (Table 3). Furthermore, for Appetite the difference was statistically significant in both 4 and 12-week after treatments, but in hearing loss the difference was significant only 12-week after treatments (Table 3).

Discussion

Otitis media is the second most common diagnosis made by pediatricians at sick patient visits. Approximately 30–60% of children have had at least one episode of acute otitis media (AOM) by age one, and 10–20% has had three or more. Approximately 80% have had at least one episode by age 3 years. With respect to otitis media with effusion (OME), approximately 80–90% will have had at least one episode of either AOM or asymptomatic middle ear effusion in the first year of life [5, 8, 10].

Otitis media accounts for approximately 25–30 million office visits per year and results in an estimated annual cost of \$3 billion to \$5 billion including medical and surgical treatment in the United States [11, 12]. Upper respiratory infections predispose to acute otitis media. Exposure to groups of children (as in child care centers) results in more frequent colds, and therefore more earaches. Exposure to air with irritants, such as tobacco smoke, also increases the chance of otitis media. Children with cleft palate or Down syndrome are prone to ear infections. Children who have episodes of acute otitis media before 6 months of age tend to have more ear infections later in childhood. Quality of life domains concern sleeping problem, physical suffering, Activity limitations, appetite, and hearing loss. The questionnaire tested in the present survey was specifically designed for parents. The inclusion of questions pertaining to sleeping disturbances was a useful addition, as this specific problem is frequent and important during AOM episodes, both for children and their parents.

Previous studies have shown the negative impact of recurrent or chronic otitis media on parental stress, family functioning and parents' perception of children's QOL [3, 4].

The negative impact of AOM on the child's functioning appeared to be substantial and similar between the studies in this review, with the majority of children with AOM reported to experience physical suffering (fever, pain and discomfort in the ear, draining ear), difficulty with hearing or speech, behavioral problems or emotional distress. In OME, hearing, speech, behavioral, and balance problems were most prominent.

Asmussen found that more than 50% of the caregivers experienced physical problems on the part of their child, such as difficulty in sleeping, poor eating, irritability or fussiness, as a consequence of recurrent acute otitis media and chronic OME [11]. Rosenfeld found physical suffering (e.g. ear pain or discomfort, high fever, poor balance), hearing loss and emotional distress to be prominent in children with recurrent acute otitis media and chronic OME, especially in those admitted for ventilation tube insertion [12]. Similar results were found by Greenberg [13]. Al Sarraf reported that children suffering from an episode of acute otitis media scored significantly worse than healthy children did on all clinical and functional measures [14]. Those who had recovered from AOM continued to score two to four times worse on these measurements compared to healthy controls during 6–12 weeks of follow-up. Bertin reported sleep and appetite to be moderate to severely affected at the start of an acute episode of OM [15]. Results of the present study support the latter approach. Our study has several limitations. Obviously, the QOL of healthy children recruited in this survey was not assessed before or after the AOM episode. However, we can reasonably assume that most of them had a very good QOL (maximum score), as supported by results of health surveys in the US [5, 8]. Test–retest reliability of the questionnaires was not assessed. As results of this study suggest that the questionnaire is a useful tool to measure the severity of AOM and its consequences on the QOL, more detailed reliability and validity information should be obtained. A study suggested that the parents of children who experienced recurrent episodes of AOM rated their children as significantly more demanding compared to healthy children. These parents also rated themselves as significantly more depressed and less competent than did control parents [9]. Finally, the fact that severity scores were only moderately correlated with overall QOL scores suggests that unmeasured psychological factors influence QOL rating of AOM by parents.

Conclusion

The children with recurrent AOM had poorer scores. Quality of life of children with three or more episodes of AOM in the preceding year was poorer than that of

children with two to three episodes. Our result showed that the hearing loss only improved 12 weeks after treatment, which this is important point to notice that should not expect the total improvement of hearing loss after 4-weeks of AOM treatment and its may necessary to follow up the patient for longer time such as 12-week.

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Conflict of interest None.

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