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Article

Impact of adenotonsillectomy on the quality of life of patients operated on at the Hospital de Clínicas, Paraguay

Impacto de la amigdalectomía en la calidad de vida de los pacientes operados en el Hospital de Clínicas, Paraguay

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ABSTRACT
The objective of this study is to determine the impact of adenotonsillectomy on the quality of life of postoperative patients. The study is observational, cross-sectional, and retrospective. The files of all postoperative adenotonsillectomy patients in Otorhinolaryngology Service, Hospital de Clínicas, San Lorenzo Paraguay. The Obstructive sleep apnea – 18 questionnaire (OSA 18) was applied, asking patients about symptoms before and after surgery. An effective sample of 143 postoperative patients was obtained. The average age was 6.05 ± 2.08 years, 55.10% (81) were male and 44.89% (66) were female, 65.30% (96) were from urban areas and 34.69% (51) from the rural areas. The t test was performed for means of two paired samples, comparing the results of the Obstructive sleep apnea – 18 questionnaire surveys before and after surgery which presented a significant difference ($p < 0.05$) with a tendency to improve the quality of life after surgery. It has been shown that there is a significant difference, a considerable improvement in the quality of life of patients after adenotonsillectomy.

Keywords: adenotonsillectomy, OSA 18, quality of life.

1. Introduction

In childhood, Waldeyer's lymphatic ring undergoes a progressive development at the expense of the lymphatic tissue that constitutes it, leading to an increase in size until puberty. Tonsillar and / or adenoid hypertrophy can cause upper airway occlusion, triggering hypopneas or apneas during sleep, with its different systemic repercussion(Del *et al.*, 2002).

Sleep breathing disorders (SRD) in children range from snoring to more severe forms such as obstructive sleep apnea(Mitchell and Kelly, 2007). They have been shown to influence up to 35% of the pediatric population, affecting quality of sleep, ventilation function, physical development, brain function of children, and their quality of life(Zhao *et al.*, 2018)how should the decision be made remains unclear. The objective of this study was to investigate potential predictors for the treatment decision, i.e., surgical treatment vs wait and see in children with habitual snoring related to adenoidal and/or tonsillar hypertrophy. Methods: Children with complaints of snoring and/or apnea associated with adenotonsillar hypertrophy who received polysomnography (PSG.

Obstructive sleep apnea-hypopnea syndrome (OSAHS) is a highly prevalent pathology in childhood and has been associated with an increased risk of developing cardiovascular and other systemic diseases(Garetz *et al.*, 2015). It is a chronic disease that can affect the psychosocial environment of the patient, altering their well-being. This alteration can be measured and quantified by means of health-related quality of life questionnaires(Chiner *et al.*, 2016).

There are very few questionnaires specific for OSAHS in children. The Obstructive Sleep Apnea (OSA-18) questionnaire, validated in 2000 by Franco et al. is one of the most used today. It has been used in several studies to assess the impact that different interventions and treatments have on the lives of patients, emphasizing the physical problems, functional limitations and the emotional consequences of a disease(Franco, Rosenfeld and Rao, 2000).

Regarding the treatment of these patients, adenotonsillectomy is considered as the first treatment option(Fehrm *et al.*, 2020), being beneficial in most cases. However, there are studies that affirm a high prevalence, between 25% and 40%, of residual OSAHS after surgery(Rana *et al.*, 2020). This could be related to incomplete resection of the adenoid tissue(Trachsel and Datta, 2019) and it has also been revealed that the majority of children with OSAHS present multiple sites of airway obstruction, including the soft palate, oropharynx, base of the tongue, lingual tonsils or supraglottis (Royer F *et al.*, 2006)a survey on quality of life is utilized validated abroad (OSA-18. The immunological status of the patient is also a factor that influences the postsurgical evolution since allergy can generate an upper airway obstruction by producing edema of the nasal mucosa and increased secretions(Mullol, Maurer and Bousquet, 2008)including chronic respiratory diseases, usually have considerably impaired sleep quality that may increase the frequency of exacerbations and severity of symptoms, lead to difficulty in patient management, and reduce quality of life (QOL.

Given the high number of children with obstructive symptoms who are attended to, in our service and who require a surgical treatment, it is extremely important to assess whether there is indeed a change in the quality of life of the patient's posterior to the intervention, from the perspective of the patients and their caregivers. Therefore, we decided to apply the OSA questioner - 18 to each of them, considering that it is an appropriate tool for our study, and that different aspects of the life of the patients are correlated to the findings of the physical examination, emphasizing the presence or absence of obstructive symptoms, with simple questions that are easy to interpret by our population.

2. Patients and methods

Study design - Observational, descriptive, cross-sectional, retrospective. Non-probability sampling of consecutive cases

The target population was postoperative adenotonsillectomy patients.

The accessible population was postoperative adenotonsillectomy patients in the Otorhinolaryngology Service of the Hospital de Clínicas, during 2019-2020.

The inclusion criteria considered were postoperative adenotonsillectomy patients, ages 3 to 10 years, without distinction of sex or origin, with a minimum post-surgical follow-up of 6 months.

The exclusion criteria considered were postoperative children with adenotonsillectomy with other underlying pathologies (craniofacial syndromes, neuromuscular disease, developmental delay, or those receiving regular medication for psychiatric disorders). Incomplete records and patients who did not agree to participate in the survey.

The variables studied were:

Age: 3 to 10 years.

Sex: male and female.

Area of origin: rural and urban (considering urban to be all the areas included within the central department and the capital).

Adenoid hypertrophy degree: after findings in the lateral cavum radiography, using the following classification: two lines are drawn, one that passes at the level of the soft palate and the other parallel following the body of the sphenoid. According to the area that the adenoid tissue occupies, between these two lines we have the following classification: grade I: obstruction up to 25%; grade II: obstruction up to 50%; grade III: obstruction up to 75%; grade IV: 100% obstruction.

Tonsillar hypertrophy Degree: Brodsky scale: Grade 0, absence of tonsillar tissue; Grade 1, the tonsils are located on the tonsillar pillar; Grade 2, the tonsils protrude from the posterior tonsillar pillar; Grade 3, the tonsils reach the midpoint between the anterior tonsillar pillar and the uvula; Grade 4, the tonsils reach the uvula.

OSA-18 quality of life questionnaire includes 18 items grouped into 5 domains; each item being scored on a 7-point ordinal scale. The total score can range between 18 and 126. The questionnaire allows classifying the impact on quality of life into mild (score less than 60), moderate (score between 60 and 80) and severe (score above 80)(Ericsson, Lundeborg and Hultcrantz, 2009)health related quality of life (HRQL.

Data collection was carried out by reviewing the patients' medical records, extracting filiation and clinical data, as well as telephone contact, through which we communicated by telephone with the parents of each patient, proceeded to read them the informed consent, after which, with their consent, we proceeded to the application of the OSA-18 questionnaire.

To calculate the sample size, we used an average of the prevalence (36%) shown in the study "Effectiveness of Adenotonsillectomy vs Watchful Waiting in Young Children with Mild to Moderate Obstructive Sleep Apnea. A Randomized Clinical Trial ". Considering an expected prevalence of 36%, an amplitude of 20% and a confidence index of 95% (Zα 1.96), the sample size should be a minimum of 90 patients.

The collected data were assigned and analyzed in a Microsoft Office Excel spreadsheet. A descriptive analysis of all the variables analyzed was carried out.

The data collected from the study subjects was kept confidential and the four bioethical principles of beneficence and non-maleficence, autonomy and justice were respected. Anonymity was also maintained, and the confidentiality of the results and data of each person involved was respected.

3. Results

An effective sample of 143 postoperative patients was obtained. The average age of the patients at the time of surgery is 6.05 ± 2.08 years, with a range of 7 years. 55.10% (81) are male and 44.89% (66) female. Regarding the distribution according to the origin, 65.30% (96) are from the urban area and 34.69% (51) from the rural area.

The degree of adenoid and tonsillar hypertrophy of the patients before surgery is detailed in graphs 1 and 2.

Figure 1.
Degree of adenoid hypertrophy of the patients before surgery. From left to right, grades 1, 2, 3 and 4 are shown, respectively.

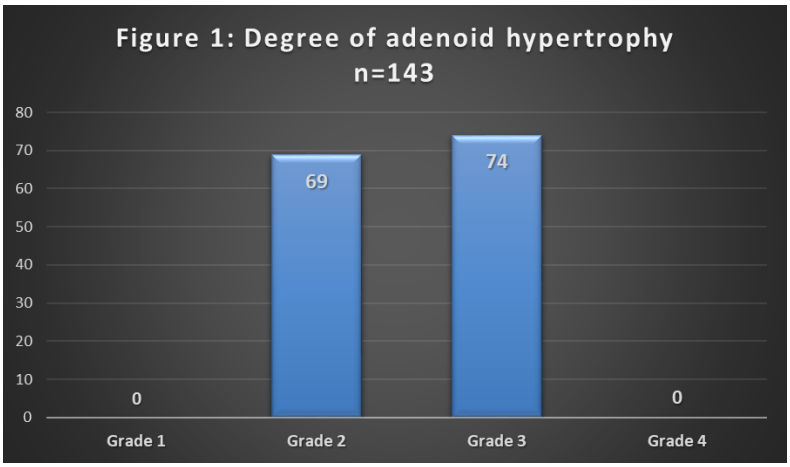
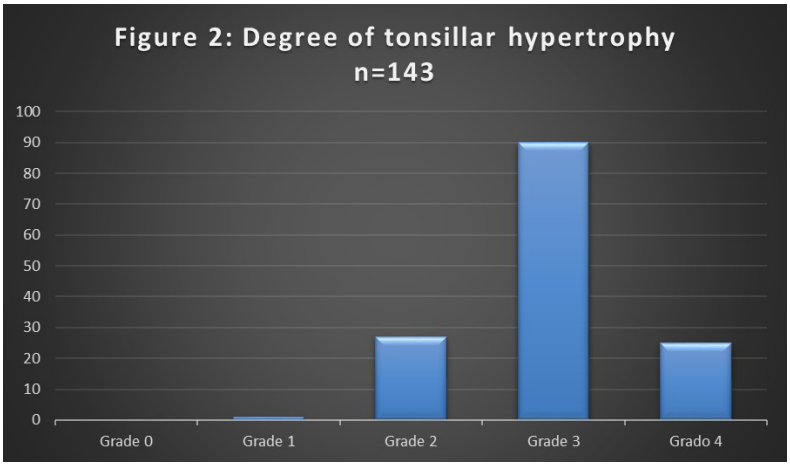


Figure 2.
Degree of tonsillar hypertrophy before surgery. From left to right, grades 0, 1, 2, 3 and 4 are shown, respectively.



The t-test was performed for means of two paired samples comparing the results of the OSA-18 survey before and after adenotonsillectomy, in which a significant difference ($p < 0.05$) with a tendency to improve the quality of the life after surgery was found, as detailed in Table I.

Table I.
T-test for means of two paired samples, OSA-18 before and after surgery.

	Presurgical OSA - 18	*Post surgical OSA - 18*
Mean	2,713286713	1
Variance	0,205948981	0
Observations	143	143
Hypothetical difference of means	1	
Degrees of freedom	142	
Statistical t	18,79543276	
P(T<=t) one-tailed	1,18839E-40	
Critical value of t (one-tailed)	1,655655173	
P(T<=t) two-tailed	2,37679E-40	
Critical value of t (two-tailed)	1,976810994	

4. Discussion

During the development of the work, the files of 164 patients were reviewed, of which 21 patients were not considered because it was not possible to contact them through the telephone numbers that were in their clinical files.

The postsurgical results obtained in our patients have also been verified in the studies of "The Childhood Adenotonsillectomy Trial" (CHAT) and "The Karolinska Adenotonsillectomy" (KATE) where they recommend adenotonsillectomy in children with moderate OSAS, because the postsurgical results are higher than watchful waiting, however, in children with mild OSA, watchful waiting is preferred(Marcus *et al.*, 2013). Mitchell and colleagues have shown that preoperative values for OSA-18 total scores are high in children with mild or severe RRT. Both groups have presented a great improvement in the quality of life after adenotonsillectomy, the degree of improvement is similar(Mitchell and Kelly, 2005).

In order to objectively assess the presence of respiratory disorders during sleep, the preferred study is Polysomnography(Pomerantz, no date). It would be very useful to be able to perform a polysomnography before and after adenotonsillectomy, but at present, we do not have the study in our hospital and most of our patients do not have the financial means necessary to perform it in private hospitals.

One factor that could be considered in the study population is the neurocognitive morbidity of the patients, which includes hyperactivity, inattention, attention deficit disorder and excessive daytime sleepiness. Chervin et al. have shown that children after adenotonsillectomy tend to improve their behavior one year after surgery(Chervin *et al.*, 2006)for which neurobehavioral complications are believed to be the most important adverse outcomes. To improve understanding of this morbidity, its long-term response to adenotonsillectomy, and its relationship to polysomnographic measures, we studied a series of children before and after clinically indicated adenotonsillectomy or unrelated surgical

care. METHODS. We recorded sleep and assessed behavioral, cognitive, and psychiatric morbidity in 105 children 5.0 to 12.9 years old: 78 were scheduled for clinically indicated adenotonsillectomy, usually for suspected SDB, and 27 for unrelated surgical care. One year later, we repeated all assessments in 100 of these children. RESULTS. Subjects who had an adenotonsillectomy, in comparison to controls, were more hyperactive on well-validated parent rating scales, inattentive on cognitive testing, sleepy on the Multiple Sleep Latency Test, and likely to have attention-deficit/hyperactivity disorder (as defined by the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition.

It is important to consider that most of our patients come from the urban area. This leads us to assume that there are many patients in rural areas of the country, who due to the lack of specialists in their locality and a lack of economic means, do not consult and are not diagnosed in time.

5. Ethical aspects

The data collected from the study subjects was kept confidential and the four bioethical principles of beneficence and non-maleficence, autonomy and justice were respected. Anonymity was also maintained, and the confidentiality of the results and data of each person involved was respected

6. Conflict of interest

The authors declare that they have no conflicts of interest.

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The authors state that the study was self-funded

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RESUMEN

El objetivo de este estudio fue determinar el impacto de la adenoamigdalectomía en la calidad de vida de los pacientes postoperados. Se diseñó un estudio observacional, transversal y retrospectivo. Se revisaron los expedientes de todos los pacientes postoperados de adenoamigdalectomía en el servicio de otorrinolaringología del Hospital de Clínicas de san Lorenzo, Paraguay, se aplicó el cuestionario de apnea obstructiva del sueño – 18 (AOS 18), en el que se preguntaba a los pacientes sobre los síntomas antes y después de la cirugía. Se obtuvo una muestra efectiva de 143 pacientes postoperatorios. La edad media fue de 6,05 ± 2,08 años, el 55,10% (81) eran hombres y el 44,89% (66) eran mujeres, el 65,30% (96) eran de zonas urbanas y el 34,69% (51) de zonas rurales. Se realizó la prueba t para medias de dos muestras pareadas, comparando los resultados de la encuesta del cuestionario de apnea obstructiva del sueño - 18 antes y después de la cirugía que presentó una diferencia significativa ($p < 0,05$) con tendencia a mejorar la calidad de vida después de la cirugía. El estudio muestra una mejora considerable en la calidad de vida de los pacientes tras la adenoamigdalectomía.

Palabras clave: adenoamigdalectomía; AOS 18; calidad de vida.