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Clinical Impact of Chronic Tonsillitis on Weight and Height Parameters

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ABSTRACT

Aim: The aim of the study was to determine the impact of chronic tonsillitis before and after the surgical intervention with physiological values of the physiological parameters, such as the weight and height. **Material and methods:** The clinical study was of a transversal type (cross-sectional). In the study participated 85 patients, who fulfilled the criteria of the study. **Results:** Mean age of the participants in the study was 7.15 (7.11 years, for the boys and 7.19 years for the girls). There were no significant statistical changes in the boys and girls included in the study according to age. Connections between the weight and height resulted very strong and statistically important for each phase of the measurements performing in the study. **Conclusion:** I propose careful treatment of patients with chronic tonsillitis, especially for the young age patients as well as measurement taking for an adequate treatment on time (adenotonsillectomy) since it is the only method to complication prevention in the organism including the physiological parameters like weight and height.

Key words: Chronic tonsillitis, weight, height.

1. INTRODUCTION

Inflammatory changes in the tonsils as a consequence of the local or general disorders in the organism present the clinical entity called Tonsillitis that may be acute or chronic. In addition to local disorders, the inflammatory changes in tonsils, lead to general disorders in the body-organism. In our study, there have been noticed the clinical changes especially in patient's weight and height, these parameters were confirmed (1, 2). The tonsils included in the inflammatory process lose the capability of lymphocytes production bringing about lymphocytes relations disorders of T and B-lymphocyte (T-Ly / B-Ly) as well as in the immune-globulins having direct influence in the cell and hormonal immunity, as it seems and at the hormonal ones through the hormonal feedback from the hypophysis (3, 4). Local clinical manifestation: the tonsillogenic, odor (bad smell) from the mouth, difficulty in breathing, continually cough,

feeling of other body in the pharynx and irritated angular lymphatic angle. At the other organs, it is worth mentioning the immunogenic uveitis and general ones like febris rheumatica, systematically skin's disease etc. The chronic tonsillitis, has also an impact in the patient's weight and height, where the retardation varies about 10% from the children with normal development (5, 6).

2. AIM OF THE STUDY

The aim is to define the influence of chronic tonsillitis before and after surgical intervention of the tonsillectomy with the physiological parameters such as the patient's weight and height included in our study.

3. MATERIAL AND METHODS

The clinical study was of a transversal type (cross-sectional). In the study were included 85 patients (37 boys and 48 girls), all these patients have fulfilled the needed criteria for study. They were diagnosed with a form of chronic tonsillitis, treated at

Variable	Total	Gender		P- values
		Boys (n=37)	Girls (n=48)	
Age	7.15 ± 1.89 *	7.11 ± 2.01	7.19 ± 1.82	0.849
4 age	8 (9.4) †	4 (10.8)	4 (8.3)	0.913
5 age	11 (12.9)	5 (13.5)	6 (12.5)	
6 age	15 (17.6)	7 (18.9)	8 (16.7)	
7 age	13 (15.3)	5 (13.5)	8 (16.7)	
8 age	14 (16.5)	6 (16.2)	8 (16.7)	
9 age	13 (15.3)	4 (10.8)	9 (18.8)	
10 age	10 (11.8)	5 (13.5)	5 (10.4)	
11 age	1 (1.2)	1 (2.7)	0 (0.00)	
Status				0.525
Children	29 (34.1)	14 (37.8)	15 (31.3)	
Pupil	56 (65.9)	23 (62.2)	33 (68.8)	
Owelling city	47 (56.0)	21 (58.3)	26 (54.2)	0.703
village	37 (44.0)	15 (41.7)	22 (45.8)	

Table 1. General characteristics for the patients included in the study. * An average value ± standard deviation. † Absolute number and percentage according to columns (in paranthesis). ‡ P-value according to the test of study (for variable number) or hi square test (for the categorical variable).

Variable	Total		Boys (n=37)		Vajza (n=48)	
	Medium value ± Dev.Stnd	P- value	Medium value ± Dev.Stnd	P- value	Medium value ± Dev.Stnd	P- value
Weight						
Before the operation	23.86 ± 7.33	0.212	24.27 ± 7.03	0.367	23.54 ± 7.61	0.538
6 month after the operation	24.96 ± 7.39		25.53 ± 6.99		24.52 ± 7.73	
12 month after the operation	25.87 ± 7.51		26.61 ± 7.20		25.29 ± 7.77	
Height						
Before the operation	119.9 ± 11.2	0.012	120.3 ± 10.6	0.112	119.8 ± 11.8	0.105
6 month after the operation	122.6 ± 11.5		123.0 ± 11.0		122.4 ± 12.1	
12 month after the operation	125.3 ± 11.8		125.8 ± 11.9		125.0 ± 11.9	

Table 2. Medium value of the weight and height accordig to time of the measurement in the study. * P-value according to one-way test ANOVA.

Variable	Standard me- dium weight	Boys				P-value for three periods	P- value before the op. 12 month after op.
		Medium weight before the oper- ation	Medium weight 6 months after the operation	Medium weight 12 months after the operation			
Age							
4 age	20.28	14.13	15.25	16.25	0.076 *	0.033 *	
5 age	22.03	17.00	18.40	19.30	0.370	0.198	
6 age	23.51	21.86	22.92	23.43	0.408	0.214	
7 age	30.90	24.40	26.10	27.20	0.494	0.261	
8 age	35.28	27.42	28.50	29.75	0.708	0.421	
9 age	40.36	31.00	32.13	33.38	0.686	0.417	
10 age	46.16	31.20	32.20	33.80	0.746	0.464	
11 age	52.56	37.00	40.00	42.00	-	-	
Total	31.46	24.27	25.53	26.61	0.367	0.156	
Girls							
4 age	20.39	14.00	14.50	15.13	0.687 *	0.408 *	
5 age	23.75	15.83	16.75	17.67	0.418	0.208	
6 age	27.39	16.81	17.63	18.50	0.521	0.267	
7 age	31.47	21.31	22.63	23.38	0.329	0.152	
8 age	33.55	30.81	31.69	32.25	0.329	0.151	
9 age	41.82	28.88	29.87	30.44	0.617	0.341	
10 age	48.18	33.50	34.80	36.10	0.831	0.559	
Total	32.93	23.54	24.52	25.29	0.538	0.267	

Table 3. Medium weight of the subject in the study according to age and gender. * P-value according to one-way test ANOVA.

the Department of Otorhinolaryngology–(ENT) of the Regional Hospital–Gjilan (from January 2011–February 2015). The clinical measurements, weight, height, were accomplished before the surgical intervention 6 months and 12 months after the operation of each patients included in the study. The statistical data analysis took place with statistical package SPSS (Statistical Package for Social Science) version 19. In the research, were considered the significant statistical values, values P>0.05.

4. RESULTS AND DISCUSSION

General data for the subjects included in the study. In the study participated 85 patients, 37 boys (43.5%) and 48 girls (56.5%) of the age of 4 – 11 years (10 years were the maximal ages for the girls). All participants were diagnosed with a form of chronic tonsillitis. As it will be detailed in the following analysis: The mean age of the participants in the study was 7.15 years (7.11 years for the boys and 7.19 years the girls). There were no significant statistical changes in the boys and girls patients included in the study according to age, as it seems in the Table 1. Thus, 9.4% of the patients were of the age of 4 years (10.8% of the boys and 8.3% of the girls), 12.9% of

Variable	Standard medium height	Boys			P-value for three periods	P- value before the op. 12 month after op.
		Medium height before the operation	Medium height 6 months after the operation	Medium height 12 months after the operation		
Age						
4 age	109.5	102.0	103.9	106.4	0.164 *	0.106 *
5 age	116.8	110.6	112.9	114.7	0.020	0.018
6 age	123.9	116.7	118.2	119.6	0.074	0.031
7 age	131.0	119.2	123.0	125.4	0.017	0.013
8 age	137.8	124.2	128.2	132.5	0.005	0.002
9 age	144.1	130.8	132.8	135.0	0.515	0.287
10 age	149.9	134.6	137.6	141.2	0.176	0.087
11 age	155.5	135.0	140.0	149.0	-	-
Total	131.2	120.3	123.0	125.8	0.112	0.032
Girls						
Age						
4 age	108.4	100.5	102.5	106.8	0.013 *	0.020 *
5 age	116.1	106.8	109.5	112.2	0.017	0.010
6 age	123.9	115.5	116.8	119.4	0.037	0.017
7 age	131.3	116.1	118.6	121.0	0.103	0.044
8 age	137.7	126.4	128.9	130.1	0.086	0.051
9 age	143.8	125.7	129.7	132.6	0.009	0.006
10 age	149.6	142.0	145.0	148.2	0.360	0.145
Total	131.6	119.8	122.4	125.0	0.105	0.034

Table 4. Medium height of the subject in the study according to age and gender. * P-value according to one-way test ANOVA.

Variable	Total	Gender		P- value †
		Boys (n=37)	Girls (n=48)	
Weight before the operation				
Under the standard	81 (95.3) *	34 (91.9)	47 (97.9)	0.193
In norm	4 (4.7)	3 (8.1)	1 (2.1)	
Weight 6 months after the operation				
Under the standard	78 (91.8)	32 (86.5)	46 (95.8)	0.120
In norm	7 (8.2)	5 (13.5)	2 (4.2)	
Weight 12 months after the operation				
Under the standard	78 (91.8)	32 (86.5)	46 (95.8)	0.120
In norm	7 (8.2)	5 (13.5)	2 (4.2)	

Table 5. The Patient's weight in the study compared to standards. * The absolute number and percentage according to columns (in parenthesis). † P-value according to hi square test

Variable	Total	Gender		P- value †
		Boys (n=37)	Girls (n=48)	
Height before the operation				
Under the standard	84 (98.8) *	37 (100.0)	47 (97.9)	0.377
In norm	1 (1.2)	0 (0.0)	1 (2.1)	
Height 6 months after the operation				
Under the standard	84 (98.8)	37 (100.0)	47 (97.9)	0.377
In norm	1 (1.2)	0 (0.0)	1 (2.1)	
Height 12 months after the operation				
Under the standard	81 (95.3)	36 (97.3)	45 (93.8)	0.444
In norm	4 (4.7)	1 (2.7)	3 (6.3)	

Table 6. The Patient's height in the study compared to standards. * The absolute number and percentage according to columns (in parenthesis). † P-value according to hi square test

the patients were of the age of 5 years (13.5% of the boys and 12.5% of the girls) and so on. With regard to subject's dwelling included in the study, 56% of them (58.3% boys and 54.2% girls) were living in the cities or urbane zones, while the other part about 44% of the patients were living in the villages, or rural zones. Anyhow, differentiations in

dispersing of the dwelling place according to gender resulted not significant by the statistic's aspect (P=0.703). These data are presented in detailed manner in Table 1.

It can be noticed that, the medium weight and height were continually increased, starting from the moment before the surgical intervention (Table 2). Thus, the medium weight before the operation, 6 and 12 months after the operation was 23.86 kg, 24.96 kg and 25.87 kg, see (Table 2). However, this medium weight changes in time did not result to be significant as the statistical aspect is concern. A similar situation was noticed even thought the medium weight was analyzed in special way separately for boys and girls.

Thus, both in boys and girls patients, there has been noticed a medium weight increasing compared to the moment before the operation, but these changes were not of a big importance by the statistic's aspect (Table 2). However, the clinical importance is evident and do not leave room for any suspicion. As the time wore on, the weight was increased both to the boys and girls, regardless that statistical significance was not achieved. The same view has been noticed concerning to height (Table 2). The medium height before the surgical intervention was 119.9 cm, then it was increased up to 122.6 cm, 6 months after the surgical intervention so as to mark the highest medium value 12 months after the operation with a value of 125.34, this change of medium height before the operation and 12 months after, resulted very significant as statistic's aspect is concern (P=0.12), regardless of this, the changes of the medium height on time for the boys and girls were not important by the statistic's aspect, though P- values in this case may considered as values with the limits (P=0.112) for the boys and (P=0.105 for the girls). Regardless of impossibility to achieve the statistical significance, the clinical importance is clear indicating the height increasing for the subject in the study is beyond whatever suspicion. Mean-

while, as the girls are concern (Table 3) can be seen the same tendencies of weight development at the moment before the surgical intervention, 6 and 12 months after the operation marking the medium weight increasing in each case. This tendency is present even for the girls of all ages. One thing that it is conspicuous about the medium weight according to ages for the boys and girls showed in the data of the Table 3, it is the fact that, for each group, the medium weight of the patients with the chronic tonsillitis in the study it is obviously lower compared to standard values, at either before the operation (what indicates perhaps the chronic tonsillitis had a role in sticking of these patients) or 6 and 12 months after the surgical intervention. In the Table 4 may be noticed that for the boys of each age groups, the medium height of the patient included in this study increased when passing from the moment before the operation in 6 and 12 months after the surgical intervention. This tendency is present at all age groups. The medium weight changes during the there phases of the study, have reached a statistical significance between the boys patients of the age of 5 years ($P=0.018$ for the difference of the medium height during the period of 12 months after and before the operation) of the age of 6 years ($P=0.031$), of the age of 7 years ($P=0.013$), and of the age of 8 years ($p=0.002$), while for the patients aged 4 and 10, no statistical importance was found, well, P-values were higher than 0.05. In this case the statistical significance and clinical ones strongly indicate that these tendencies are very important showing that in the patients of whatever age in this study, found a real increasing of medium height, 6 and 12 months after the operation. With regard to the girls (Table 4) may be noticed that the situation and tendencies are similar with the boys: for each groups, the medium height of the girls patients has had an increasing 6 months and 12 months after the operation compared to measured height before the operation. Changes of the medium height values 12 months after the surgical intervention compared to the height before the operation reached the statistical significance for the age (4, 5, 6, 7, 8, 9) and we can say that there was a statistical significance within the limits for the girls subject aged 10. In this case the statistical significance and clinical ones strongly suggest that, these tendencies are very important, because to the girls whatever age they may be, there is a real increasing of medium height, 6 months and 12 months after the operation. The following table presents the classification at the patients included in our study according to their weight against the standards for the age in three phases of the measurement of this parameter (Table 5 and 6) from the other prospective confirm the conclusion of the (Table 3 and 4) indicating that the medium weight and height of patient with chronic tonsillitis in our study in a considerable manner may compared with standard respective values. Thus, in the table 5, we see even before the operation about 95.3% of the patients included in the study had the lower weight than normal standard weight that is suggest-

ed for their ages, only 4.7% of them had a weight in norm. Meanwhile, 6 and 12 months after the operation it is noticed a light improvement since the percentage of the subjects with normal weight was increased from 4.7% (that was before the operation) to 8.2%. As the height is concern, in the table 6, we see, that before the operation, about 98.8% of the patients included in the study, had the lower height than standard height that is suggested for their age and only 1.2 % of them had the height in norm. Whereas, 6 months after the operation, no any improvement has been found, because the percentage of the patients with normal height did not change, while 12 months after the operation found a light improvement because the percentage of the patients with normal height was increased from 1.2% (that was before the operation) to 4.7%, gender differences regarding to classification based on the height, are not significant by the statistical aspect (Table 5).

5. CONCLUSION

Regardless of cross-sectional nature of the study, we think that chronic tonsillitis may have a role in the “sticking” of these patients related to weight and height, so the surgical intervention to addressing properly this disease is very important to improve these parameters, abreast to the other factors like natural growth etc, as it has been showed clearly by the tendencies always in an increasing the weight and height 6 and 12 months after the surgical intervention for the boys and girls of each group ages in the study.

CONFLICT OF INTEREST: NONE DECLARED.

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