

## SHORT COMMUNICATION

# Evaluating Respiratory Challenges in Pediatric Obesity

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Present study has been conducted on obese children ranging in age from 3 to 14 years having Body Mass Index (BMI) value more than equal to 30. Group of 100 children of same age group having no any history of obesity are taken as control group. Following criterion has been followed for the estimation of level of difficulty on breathing: Parental Interview through questionnaire, assessment and evaluation by Otorhinolaryngologist and pediatrician. There was no Polysomnography Test carried out on children under study. Results indicate that higher percentage of breathing difficulties have been observed in obese children as compared to control group children. Based on the otorhinolaryngologic examination, it was noted that the percentage of the tonsillar hypertrophy and adenoid is almost the same in both groups, having a higher predominance in the obese children group. This shows that the difficulty in breathing of the obese children is directly due to their obesity and not because of the presence of the adenotonsillar hypertrophy. In the pediatric examination, it was observed that the group of obese children has a slight pulmonary obstruction due to the fat which compromises the pulmonary and also the abdominal mass which obstacles the diaphragm.

**Keywords:** Breathing, obese, children.

## INTRODUCTION

### Definition of obesity

Obesity is a metabolic shock of triglycerides, which results to an increased excess of the fat tissue generally in the body, being beyond the amount that is necessary for its normal functioning. The overweight misbalances the metabolism in general, the physiological function of organs by providing a shock of the general nature, including even the nervous system which is reflected in agony, depression, lack of interest, self-disparagement and up to aggression towards others and themselves. (BALLANGER, 2001.)

The main causes that lead to obesity are:

### Genetic predisposition

Out of the recent studies (Brunetti, et al.,) carried out, it has resulted that there exists a gene that is directly related to obesity. This gene determines the production of the protein called leptin which is naturally higher in obese children and adults. In obese children it is 4 times higher than in normal children. Leptin through the encephalic centers gives the message of hunger or satiety according to the level of its production.

Insatiability or increased appetite is directly related to the increase of the overweight and based on the latest data, it is determined from the so-called "hormone of appetite" or as it is also called the ghrelin which is produced in the stomach. (Rulh and Brokuell, 2001):

Its production is stimulated before the meals and decreased after the meals based on a normal determined

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balance, while the misbalance of its production is directly reflected in the consumption of food which is increased from 30% to 50%.

According to the researchers, this "hormone" is directly responsible for the rapid recovery of the lost kilograms after the loss of the weight. (Ross et al., 1998):

The effect of this "hormone" in the normalization of weight has a time frame on both cases: that of the overweight or loss of the weight. In the first case the effect is faster and this is a sound reason for the researchers to directly raise their attention on finding out the factors that determine the production of this hormone or as many authors cite the successes in this direction are closely related to the effective fight against obesity. (Savage et al., 2007)

Body Mass Index (BMI) classification is used for obesity determination and is calculated using formula

### **BMI Categories Weight/(body height)<sup>2</sup> (Kg/m<sup>2</sup>)**

- Underweight = <18.5
- Normal weight = 18.5–24.9
- Overweight = 25–29.9
- Obesity = BMI of 30 or greater

### **METHODOLOGY**

Questionnaire for the parents and educators includes following questions:

1. Does the child sleep with an open mouth?
2. Does he snore during the night?
3. Does there occur any interruption of breathing to the child during the night and how often? Does the child awake frightened during the night?
4. Is the child sleepy or tired during the day?
5. Does the child have any difficulty on breathing when playing or running during the day?

After the survey, there was conducted the otorhinolaryngological examination of the children for tonsil hypertrophy and hypertrophy of adenoids.

After the otorhinolaryngological examination, a pediatrician examined the children for any pulmonary obstruction. To increase the accuracy of the study as the questionnaire which is the most important part of it contains some subjectivity in some doubtful cases where the subjective and objective examination does not match, it was decided to repeat the questionnaire and examine the children at certain times. We have tried to examine the children belonging to both groups at the moment that they did not have any health problem related to any infection of the upper respiratory system.

The ORL physician, pediatrician and biologist decided who were the children who had difficulty on breathing, after comparing the subjective and objective examination.

It was also searched in both groups for the OSAS (obstructive sleep apnea syndrome). This is a comparative study to see the difference between the obese children compared with the group of non obese children.

In the control group we tried to select children with normal weight only to avoid any influence on the study.

### **RESULTS**

Results of the present research indicates that about 12% of the children belonging to the obese children group had difficulty on breathing during the night. Age related differences show that the difficulties on breathing were seen more often to children of the age group of 3-9 years than those of 9-14 years old. The OSAS in the group of obese children is estimated to be 4%. Whereas about 6% of the children belonging to the control group have difficulties on breathing and 2% of them have OSAS. Objectively comparing the two groups of children that have difficulties i.e. those obese and non obese, it was noted that the OSAS group had a remarkable adeno-tonsillar hypertrophy. On the groups that do not have OSAS and have difficulty on breathing, it was noted an adenotonsillar hypertrophy, but on the group of obese children there were 3 children who did not have adenotonsillar hypertrophy and meantime displayed remarkable difficulties on breathing, indicating that obesity is an important factor in the development of the difficulty on breathing.

### **CONCLUSIONS**

At the end of this comparative study we evaluate that obesity is an important factor which directly affects the difficulty on breathing of children aged 3 -14 years. In this study it was observed that the number of obese children with breathing difficulties is higher than in the control group. It is worth mentioning that on the ORL examination of the obese children with breathing difficulties about 2% of them do not have adenotonsillar hypertrophy. This assumes that the obesity is the direct cause of the difficulties on breathing and is due to the fat mass that obstacles the upper and lower respiratory system especially during the sleeping of these children. This is a complex study where it is worthy to evaluate many external and internal factors that can affect it. We think that the study should be enriched with many other elements such as the level of difficulty while breathing, the level of OSAS, the study of the sleep polysomnography., the degree of obesity, comparison with the overweight children.

We believe that we will have the necessary means to complete this study.

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