160 - SPIROMETRIC AND CLINICAL PROFILE OF SCHOOL-AGE CHILDREN IN THE CLINIC OF THE UNIVERSITY HOSPITAL OF PARANÁ

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1. INTRODUCTION

The respiratory function tests are considered the gold standard tool for diagnostic confirmation, follow the evolution of diseases, monitoring of therapy implemented, and in recent times, the survey of epidemiological data (Pereira, 1996; RODRIGUES, 2002).

Spirometric tests were unusual in childcare in the past. It was believed that they were unable to have the necessary coordination, were not collaborative and had little difficulty in the maneuvers comprehension (Arets, 2001).

Whereas, recent studies have shown that even children in pre-school, aged between three and five years, are able to perform the examination satisfactory provided there is adaptation of the criteria for acceptability and use of appropriate training strategies (and AURORA et al, 2004; EIGEN et al, 2001; MAROSTICA et al, 2002).

Studies in the field of pediatric pulmonology and spirometry have great relevance, considering that in recent years, the respiratory diseases are the major cause of morbidity and mortality in children in our country (Toyoshima, 2005).

The large urban areas formation, the technological increases, the high levels of pollution and the consequent inhalation of toxic substances, and the smoke from cars and cigarette industries has contributed to the occurrence of an increasing number of respiratory diseases in children (Almeida, 1999).

In the foreign literature there are countless works that relate the respiratory illnesses and pollution exposure to passive smoke. In Brazil, however, few studies have been published, whose can be cited: Braga, Martin, Oak and Bakony.

Whereas, the aim of this study was to identify the disorder more common in children between five and 12 years who was submitted a spirometry test in the clinic of University Hospital of Paraná. As a secondary objective: 1) quantify the spirometric parameters FVC and FEV1, FEV1/FVC and 2) relate the spirometric data with the clinical history of passive smoking, level of dyspnea and cough and wheezing.

2. METHODS

2.1 Sample

It was evaluated the symptoms and the spirometric data of 61 children, aged between five and 12 years, who underwent a spirometry test at the Hospital University of Paraná in the period of April 2005 to May 2009.

2.2 Collecting Data

The personal, the clinical and the spirometric data for each patient were extracted directly from respiratory questionnaire following the model proposed by the Brazilian Consensus of Spirometry 1996. This questionnaire was answered at the time of the examination, by the examiner who was leading the test. The records that were incomplete at the time of the collection were excluded from the study.

The personal information collected are name, gender, age (years), height (cm) and total body mass (kg). The clinical data consisted of information reported by the child or guardian / companion on respiratory symptoms (cough, wheezing), intensity of dyspnea using the modified scale of the Medical Research Council and exposure to tobacco smoke at home. The spirometric parameters used in this study were Forced Vital Capacity (FVC), forced expiratory volume in one second (FEV1).

The examinations were classified as normal, obstructive, restrictive or combined / mixed and had their severity graded as mild, moderate or severe. The interpretation of spirometric data and the reports were made by the doctor responsible.

All tests were performed by the same examiner using the One Flow spirometer.

2.3 Data Organization

All information collected was organized in Excel spreadsheets (2007, Brazil). The results were grouped according to the spirometric report, the qualitative variables were answered into yes or no and spirometric parameters were expressed as a percentage of predicted.

2.4 Statistical analysis

For correlation analysis between qualitative variables it was used the Qui-Quadrado test. For the analysis of measured data was performed Student t test. It was used the set of statistical functions in Excel 2007 and the significance level was set at 5%.

3. RESULTS

Of the 61 spirometric tests performed in children aged between five and 12 years at the Clinic of the University Hospital of Paraná, only 46 had the inclusion criteria. Of this total, 23 (50%) children were male and 23 (50%) were female. Mean age, weight and height for the sample were: 8.65 ± 2.06 (years) 32.32 ± 11.2 (kg) and 130.60 ± 11.12 (cm), respectively.

The analysis of spirometric data showed that 37% (17) of subjects had pulmonary function disorder. Of these, ten were obstructive mild, six moderate obstructive and obstructive with a reduction in vital capacity. The remaining 63% had normal (19) or normal with a positive response to bronchodilators (10). The table 1 shows the distribution of individuals separated by sex, age and report.

	Normal	Normal with positive response	DVO** Mild	DVO Moderate	DVO with decrase of VC
Gender					
Male	9	4	7	3	0
Female	10	6	3	3	1
Age*	8,58 ± 2,24	7,7 ± 2,05	9,2 ± 2,09	9,66 ± 1,03	8

Table 1.
* Values as mean ± standard deviation.
** DVO: obstructive ventilatory disorder.

About individuals considered normal, 16 (55%) were female and 13 (45%) were male, while those with a disturbance 10 (59%) were male and seven (41%) female. There was no significant association between gender and occurrence of respiratory disorders.

As for analysis of passive smoke and symptoms of cough and wheezing, there was no statistically significant difference between groups (p = 0.27, p = 0.77, p = 0.07, respectively). Despite these results, the wheezing had a value close to significant, indicating a possible association with pulmonary function disorders. The moderate dyspnea (grade 2) was the most frequent for all groups, but no statistical test was conducted to assess the significance of this result. The table 2 shows the frequency of passive smoking, coughing, wheezing and dyspnea according to the spirometry.

	Normal	Normal with variation	DVO Mild	DVO Moderate	DVO with decrases of VC	p
	n /% relativa	n /% relativa	n /%relativa	n /% relativa	N	
Passive Smoke						
Yes	4 / 21%	5 / 50%	4 / 40%	4 / 67%	0	
No	15 / 79%	5 / 50%	6 / 60%	2 / 33%	1	0,27*
Total	19	10	10	6	1	
Cough						
Yes	13 / 68,5%	5 / 50%	5 / 50%	2 / 33%	1	
No	6 / 31,5%	5 / 50%	5 / 50%	4 / 67%	0	0,77*
Total	19	10	10	6	1	
Wheezing						
Yes	9 / 47 %	7 / 70%	8 / 80%	4 / 67%	1	
No	10 / 53 %	3/ 30%	2 / 20%	2 / 33%	0	0,07*
Total	19	10	10	6	1	
Dyspnea						
0	7 / 37%	4 / 40%	3 / 30%	-	-	
1	3 / 16%	1 / 10%	-	-	-	
2	7 / 37%	5 / 50%	6 / 60%	4 / 67%	1	
3	1 / 5%	-	1 / 10%	2 / 33%	-	
4	1 / 5%	-	-	-	-	
Total	19	10	10	6	1	

Table 2.
* Qui-Quadrado. Test

The values of FVC, FEV1 and FEV1/FVC according to the report, and tobacco exposure are shown in Table 3.

Although all variables were lower in subjects with exposure to smoking, for either normal or normal with a positive response to BD, only the parameters FEV1/FVC was significantly different (p = 0.03) for individuals with normal results. In people with respiratory disorder, the nicotine exposure does not appear to affect the results. The values were similar and there was no significant difference.

	Passve Smoke	FVC	FEV1	FEV1/FVC
Normal	Yes	98,25 ± 25,38	91 ± 18,56	89,25 ± 1,70*
	No	108,86 ± 14,20	105,13 ± 14,90	94,86 ± 5,56*
Normal with a positive response to BD	Yes	96,6 ±10,83	91,4 ± 11,76	91,8 ± 9,36
	No	106 ± 17,84	100 ± 15,22	93 ± 7,24
DVO Mild	Yes	100,25 ± 13,12	74,25 ± 9,70	73,5 ± 11,70
	No	94,16 + 12,78	72,5 + 10,89	75,83 + 5,84
DVO Moderate	Yes	83 ± 9,3	50 ± 7,07	59,5 + 5,32
	No	81,5 ± 2,12	49,5 ± 10,6	58,05 + 12,02
DVO with decrease of VC	No	39	29	74

Table 3: Values of FVC, FEV1 and FEV1/FVC in predialysis according to the report, and tobacco exposure.

4. DISCUSSION

The results of this study demonstrate the most frequent disorder: mild obstructive (59%). These findings agree with the work of Mitchell (2003). In their study, it was evaluated the influence of passive smoking at home on the pulmonary function of children in João Pessoa (PB) and noted that the mild obstructive disorder was more frequent among those who had exposure for at least a period of days.

The association between gender and children's respiratory morbidity showed that respiratory symptoms (cough and wheezing), being mostly non-specific, occurring in children regardless of sex. The occurrence of cough response was positive for 26 (56.52%) children, 13 male and 13 female. Wheezing was reported by 29 (63.04) individuals, 14 males and 15 females (unpublished data).

The wheezing, even if no significant amounts, was more frequent among subjects with impaired lung function. Studies show that patterns of wheezing during childhood are associated with more diseases, especially asthma, and the worse prognosis of lung function in adulthood (CHATKIN, 2008; DELACOURT et al, 2007).

Although in the present study, no significant association between passive smoking and respiratory diseases, the literature demonstrates a strong association between these factors. Moshammer et al (2006), in an international study found that children exposed to passive smoke at home have impaired lung function, regardless of age of onset and dependent on the amount of exposure that is submitted. Studies have shown that children exposed to secondhand smoke are more likely to develop lower airway diseases, higher rates of sudden infant death syndrome child and a four times higher risk of hospitalizations and hospitalizations for respiratory problems (Berg, 1991; DiFranza, 2004;-DIAS GONÇALVES et al, 2006).

The mechanisms by which cigarette smoke acts as a causative agent of respiratory diseases is not yet well established, but is believed to have action in the suppression of the phagocytic response of neutrophils and macrophages / monocytes and stimulate the production of cytokines and interleukins (mainly IL -4, IL-5, IL-10 and IL-13) responsible for atopic conditions like asthma, eczema, rhinitis and other allergic disorders. Still interferes with the purification system mucocilar, favoring bacterial colonization of the respiratory system (KUM-NJI et al, 2006).

Some authors suggest that male children are more susceptible to the effects of tobacco smoke, but these data are still consistent (Cook et al, 1998). In this study of 17 subjects exposed to passive smoking was nine females and eight males (unpublished data) was not significantly different.

The analysis showed that the spirometric variables in individuals with normal results, the mean values of FVC, FEV1 and FEV1/FVC was lower for those with exposure to passive smoke. The FEV1/FVC ratio showed a significant difference for individuals with normal values, indicating that exposure to secondhand smoke has implications for the development of obstructive disorders (Venners et al, 2001; Bulhões et al, 2007).

The limitations of this work, we can cite the low n samples that may have compromised the analysis of the association between passive smoking and wheezing and respiratory diseases. Moreover, the set of statistical functions in Excel (2007) did not contain more specific tests that could have a better indication for this study.

5. CONCLUSION

It is with this study that mild obstructive is the most frequent among children aged between five and 12 years in the Clinic of the University Hospital of Paraná. It is still possible claim that the passive smoke exposure and occurrence of symptoms such as coughing and wheezing were not significantly associated with the occurrence of pulmonary function disorders.

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PROFILE OS SPIROMETRY AND CLINICAL OUTCOMES OF SCHOOL-AGE CHILDREN IN THE UNIVERSITY HOSPITAL OF PARANÁ.

The spirometry is a method for measuring lung function used solve diagnostic hypotheses and to monitor and quantificate lung disorders. Studies in the area of pediatric pulmonology and spirometry have great relevance, since in recent years, respiratory diseases has been a major cause of infant morbidity and mortality and major factor for hospitalization among children in the country. Whereas, the primary aims of this study were to analyze and quantify the spirometric parameters FVC and FEV1, FEV1/FVC and relate the type of disorder with clinical parameters (history of passive smoking, level of dyspnea, cough and wheezing). The study was realized at the University Hospital of Paraná, from the analysis of spirometric tests performed in the period June 2005 to July 2009, in children 5-12 years. There were 61 tests, where 46 were complete and were assessed for symptoms and spirometric data. It was used a significance level of 5% and analysis by Qui-Quadrado and t Student test. The data analysis showed that 37% of subjects had pulmonary function disorder. Of these, ten were obstructive mild, six moderate obstructive and severe obstructive with a reduction in forced vital capacity. The analysis of clinical data, passive smoking and symptoms of cough and wheezing had similar presentation between the groups (mild, moderate and severe), there was no relation no correlation between the parameters. It was concluded that the mild obstructive is the most frequent disorder children aged between five and 12 years. There is the possibility the exposition to the passive smoking and the symptoms such as coughing and wheezing were not significantly associated with the occurrence of pulmonary function disorders.

KEYWORDS: spirometry , child , airway obstruction

SPIROMETRIE PROFIL CLINIQUE ET EXTERNES HÔPITAL POUR ENFANTS D'ÂGE SCOLAIRE DE REPONSE DANS L'UNIVERSITE DE L'OUEST DU PARANA

La spirométrie est une technique d'évaluation de la fonction pulmonaire utilisés dans l'élucidation des hypothèses diagnostiques et dans le suivi et la quantification des troubles pulmonaires. Etudes dans le domaine de la pneumologie pédiatrique et spirométrie d'une grande pertinence, puisque ces dernières années, les maladies respiratoires a été une cause majeure de morbidité et de mortalité infantile et le facteur majeur pour l'hospitalisation chez les enfants dans le pays. Ainsi, les objectifs de l'étude était de quantifier les variables spirométriques CVF et FEV1, FEV1/FVC et concernent le type de trouble avec des variables cliniques (antécédents de tabagisme passif, le niveau de la dyspnée, la toux et une respiration sifflante). L'étude a été réalisée à l'hôpital de l'Université du Paraná, de l'analyse des tests spirométriques effectuées dans la période de Juin Juillet 2005 to 2009, chez les enfants de 5-12 ans. Sur les 61 tests, 46 étaient complètes et ont été évalués pour les symptômes et les données spirométriques. Nous avons utilisé un niveau de signification de 5% et l'analyse par le test t chi-carré et des étudiants. L'analyse des données a montré que 37% des sujets avaient des troubles de la fonction pulmonaire. De ce nombre, dix ont été obstructive légère, six modérée et sévère obstructive obstructive avec une réduction de la capacité vitale. L'analyse des données cliniques, le tabagisme passif et les symptômes de la toux et une respiration sifflante étaient présentation similaire entre les groupes (légère, modérée, sévère), aucune corrélation entre les variables. Il a été conclu que le obstructive légère est la plus fréquente chez les enfants âgés entre cinq et 12 ans. Vous pouvez toujours dire que l'exposition au tabagisme passif et la survenue de symptômes comme la toux et une respiration sifflante n'étaient pas significativement associés à la survenue de troubles de la fonction pulmonaire.

MOTS CLÉS: spirométrie, les enfants, obstruction des voies respiratoires.

PERFIL ESPIROMÉTRICO Y CLÍNICO DE LOS NIÑOS EM EDAD ESCOLAR EM EL AMBULATORIO DEL HOSPITAL UNIVERSITARIO DE LO OESTE DEL PARANA.

La espirometría es una evaluación de la función pulmonar usado para diagnósis y cuantificación de los trastornos pulmonares. Los estudios realizados en el ámbito de la neumología pediátrica y la espirometría son de gran relevancia, una vez que las enfermedades respiratorias han sido una causa importantísima de La morbilidad y mortalidad infantil. Los objetivos deste estudio fueron cuantificar las variables espirometricas FVC, VEF1, VEF1/CVF y relacionarlas con las variables clínicas (La historia del tabaquismo pasivo, nivel de disnea, o tos y sibilancias). El estudio ocorrió en el Hospital Universitario de lo Oeste del Paraná de junio de 2005 a julio de 2009. Fué realizado las análisis de las pruebas de espirometría en los niños de cinco a doce años. De los 61 exames, 46 estaban concluyos y se evaluaron los síntomas y los datos espirométricos. Se utilizó el nivel de significancia de 5% y la análisis, fueran realizadas mediante de la prueba t de Student y Qui-quadrado. Los resultados mostró que 37% de los sujetos tenía transtorno de la función pulmonar. Destes, diez fueron obstructiva leve, seis obstructiva moderado y uno

obstrutiva severa con una reducción de la capacidad vital. De los datos clínicos, el tabaquismo pasivo y los síntomas de tos y sibilancias fueron similar entre los grupos (leve, moderada y grave), no hay correlación entre las variables. Se concluyó que la leve obstructión es la más frecuente en los niños de cinco a doce años. Todavía, se puede decir que la exposición al tabagismo pasivo y la aparición de los sintomas, tales, como tos y sibilancias, no fueron significativamente asociados con la aparición de los trastornos de la función pulmonar.

PALABRAS CLAVE: espirometría, niño, obstrucción de las vías aéreas.

PERFIL ESPIROMÉTRICO E CLÍNICO DE CRIANÇAS EM IDADE ESCOLAR ATENDIDAS NO AMBULATÓRIO DO HOSPITAL UNIVERSITÁRIO DO OESTE DO PARANÁ.

A espirometria é uma técnica de avaliação da função pulmonar utilizada na elucidação de hipóteses diagnósticas e no acompanhamento e quantificação de distúrbios pulmonares. Os estudos na área de espirometria e pneumologia pediátrica têm grande relevância, visto que, nos últimos anos as doenças respiratórias tem sido uma das principais causas de morbimortalidade infantil e principal fator de internação hospitalar entre as crianças no país. Assim, os objetivos do estudo foram quantificar as variáveis espirométricas de CVF, VEF1 e VEF1/CVF e relacionar o tipo de distúrbio com variáveis clínicas (histórico de fumo passivo, nível de dispnéia, presença de tosse e sibilância). O estudo foi realizado no Hospital Universitário do Oeste do Paraná, a partir da análise de exames espirométricos realizados no período de junho de 2005 a julho de 2009, em crianças de 5 a 12 anos. Dos 61 exames realizados, 46 estavam completos e foram avaliados quanto aos sintomas e dados espirométricos. Utilizou-se nível de significância de 5% e análise pelos testes Qui-Quadrado e t de Student. A análise dos dados demonstrou que 37% dos indivíduos apresentavam distúrbio da função pulmonar. Destes, dez eram do tipo obstrutivo leve, seis obstrutivo moderado e um obstrutivo grave com redução da capacidade vital. Quanto à análise dos dados clínicos, o fumo passivo e os sintomas de tosse e sibilo tiveram apresentação semelhante entre os grupos (leve, moderado e grave), sem correlação entre as variáveis. Concluiu-se que o distúrbio obstrutivo leve é o mais freqüente entre as crianças com idade entre cinco e 12 anos. É possível afirmar ainda que a exposição ao fumo passivo e ocorrência de sintomas como tosse e sibilo não apresentaram associação significativa com a ocorrência de distúrbios da função pulmonar.

PALAVRAS CHAVES: Espirometria, Criança, Obstrução das Vias Respiratórias.