80 - ANALYSIS OF PULMONARY FUNCTION IN PATIENTS PRE-BARIATRIC SURGERY AFTER ROUTINE PHYSIOTHERAPY INTERVENTION

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INTRODUCTION

Obesity is currently one of the most serious public health problems.

Its prevalence is increasing sharply in recent decades, including in developing countries, the disease which led to the condition of the global epidemic.

The main cause of death in Brazil, according to the Ministry of Health, is due to cardiovascular and respiratory diseases.

An intervention popularly known in an attempt to reduce body weight is the practice of aerobic activities, aimed at decreasing body weight, improved cardiovascular fitness, improved breathing capacity, improve quality of life and has the following physiological effects: elimination of excess fat reserves, as well as facilitating the distribution of body fat that does not encourage a more healthy pattern, improves the performance of the heart to produce myocardial energy requirements by reducing the heart rate and blood pressure, increases ventilation pulmonary by-minute gain in volume and decreased respiratory rate and improves the structure and functions of the ligaments, tendons and joints, (Blair et al, 1994; BOUCHARD et al, 1994; BATTISTELLA & Yazbek, 1994).

The physiotherapist has an important role in both pre and post-operative bariatric surgery because of respiratory therapy techniques are recommended for prophylaxis or treatment of complications after surgery, as well as for the restoration of lung volume and capacity as soon possible.

Since gastroplasty can lead to changes in respiratory and lung function, is of great importance to carry out an assessment appropriate respiratory, both pre and post-bariatric surgery, with a view to the performance of Physiotherapy prevention and rehabilitation of these patients.

MATERIALS AND METHODS

Treatment of a descriptive nature, based on the results obtained from patient records at the Rehabilitation Center of Assisi School Gurgacz FAG of Cascavel - PR, industry Cardiorespiratory Physiotherapy.

We selected nine women and three men 18 to 50 years (40,5±8,80) who were previously assessed by the physician and gastroenterologist were in line to perform bariatric surgery and starting from FAG were referred to physical therapy preoperatively, which were released for physical activity in soil and cardiopulmonary rehabilitation and fits the criteria for inclusion.After explaining the study objectives and procedures to be performed and signed an informed consent form was checked vital signs on the ground.

Blood pressure was measured with the patient seated, feet flat on the floor and column supported on the chair using a stethoscope and sphygmomanometer.

Performed spirometric variables which are divided into: forced vital capacity (FVC), forced expiratory volume in 1 second (FEV1); Tiffeneau index (FEV1/FVC), forced expiratory flow between 25 and 75% (FEF 25% - 75%). We used the Subjective Stress Scale or Table Borg Borg and exercise testing in this case chosen the Walk Test 6 minutes.

The training program lasted 15 sessions, with a frequency of 2 times per week with 50 minutes each, total of 5 weeks duration.

The initial intensity for the calculated energy expenditure was 60% of maximum heart rate, Table Borg considered moderate and control the signs and symptoms. We monitored the following vital signs of patients in 5 minutes 5: heart rate, oxygen saturation, and Borg Table of signs and symptoms.

The progression of treatment was made with increasing intensity by 5% every 6 sessions and programming of the service was: 5 minutes warm-up stretches global lung expansion techniques for 10 minutes using the following devices Respiron, Voldyne, Treshould, 15 minutes of aerobic training on the treadmill or stationary bike, 15 aerobic workout with the upper rod and using Theraband and 5 minutes of stretching with global slowdown. The first and last session were used to carry out the assessment and reassessment of the patient, totaling 17 sessions.

The results of the parameters evaluated pre-treatment were compared with the results of post-treatment parameters, analyzed and tabulated in Microsoft Excel.

DISCUSSION

Respiratory therapy aimed at improving lung function through breathing exercises designed to improve ventilation, reduce work of breathing and improve gas exchange and oxygenation, or respiratory functional reeducation.

This study sought to determine whether a program of pre-operative physiotherapy improves lung function in morbidly obese candidates for bariatric surgery and compare the preoperative clinical and pulmonary function.

According to Carvalho (2001), respiratory physiotherapy element acts as a therapeutic, preventive and corrective.

Maneuvers were performed: Slow Vital Capacity (SVC), slow breaths, followed by a possible maximum inspiration and maximum expiration possible (COSTA et al., 2001), forced vital capacity (FVC): provides data flowmetry. Her achievement consists of a maximal inspiration, followed by expiration as quickly and deeply as possible, generating information about obstructive disorders (Costa et al., 2001).

Spirometric variables were evaluated: forced vital capacity (FVC), forced expiratory volume in 1 second (FEV1); Tiffeneau index (FEV1/FVC), peak expiratory flow (PEF), vital capacity (VC).

The Vital Capacity represents the largest volume of air mobilized expiratory maneuver, after filling up the lungs. Can be measured slowly (slow CV) or quickly (CV forced). The two maneuvers, slow and forced VC should be done routinely.

FEV1 is the volume of air exhaled in one second of the FVC maneuver. Both the CV (F) are expressed as FEV1 in liters corrected to BTPS conditions (body temperature and ambient pressure saturated with water vapor). The forced expiratory curves

should be recorded by plotting the volume on the vertical axis against time on the horizontal axis (volume-time curve) and also by plotting the flow on the vertical axis against the volume on the horizontal axis (flow-volume curve).

The flow reaches its maximum value at the beginning of exhalation and decreases gradually until the end of the maneuver. The peak flow, which reflects the initial maximum effort will be easily observed in the flow-volume curve.

The maneuver can be closed to observe a plateau at the end of the curve, meaning that there is more air to be exhaled. This will be readily apparent plateau in the volume-time curve.

The spirometric classification of disorders is shown in the table below:

Disorder	VEF_1 (%)	CVF(%)	VEF_1/CVF(%)
Light	60 - LI	[illegible]	60 - LI
Moderate	41 – 59	51 – 59	41 - 59
Serious	[illegible]	⩽ 50	⩽ 40

In the presence of FEF25-75/CV (F) alone reduced the disorder is classified as mild, in the presence of symptoms and / or smoking important.

LI lower limit of normal After obtaining the mean values of data Age, Height, Weight and BMI, we couldassess whether or not there would be improvement in the pre-physical therapy intervention.

Through these data below, there was a treatment plan to gain lung capacity there is gradual improvements in lung volumes and capacities withoutstatistical impact.

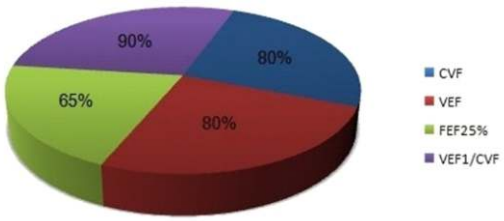
AGE	HEIGHT	WIEGHT	BMI
54	133	42,1	1,59
44	128	47,4	1,67
49	136	58,5	1,73
36	108	41,6	1,56
27	113	43,8	1,6
44	120	58,1	1,56
32	152	49,4	1,62
35	137	44,4	1,77
50	115	44,3	1,67
45	120	49,5	1,7
28	127	43,2	1,64
42	111	43,7	1,63
40,5	125	47,16667	1,645

According to the FVC significant differences were found, and also in FEV1measured before and after chest physiotherapy.

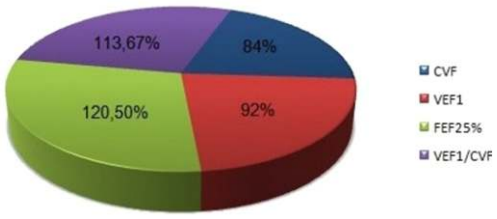
The values obtained beforephysiotherapy measuring any difference above 14% of predicted normal and afterrespiratory physiotherapy was 15% ie a difference of only 1%.

The value of FEV1 obtained before physiotherapy p = 0.57 and physiotherapy afterthe value of p = 0.36, but showed no significant change.

Below normal values and patients during treatment Standard Normality:



Standard of patients at baseline:



Note that the values of their respiratory capacity is a significant increase compared to normal.

Based on that says Costa et al (2003), obesity requires profound changes in the respiratory system and the metabolic demand due to the fact that patients undergoing bariatric surgery are more prone to developing respiratory complications postoperatively.

To Regenga (2000), the practice of breathing exercises designed to prevent and minimize complications in the postoperative period, because in the case of upper abdominal or thoracic surgery changes in lung volumes and capacities are always present, and how obese already have some degree of restriction in the respiratory system such changes are likely to worsen and cause a longer period in these patients.

During the fifteen sessions of Respiratory Therapy was performed calisthenics exercise protocol using sticks and

balls, always associated with breathing exercises, incentive spirometry as Voldyne and Respiron. These supporters are breathing exercisers who have the following objectives: pulmonary reexpansion, increased permeability of the airway and respiratory muscle strength and efficiency of the mechanical work of ventilation, providing an increase in arterial oxygenation.

Patients present with partial gains in relation to spirometric findings reporting the importance of early intervention protocols.

CONCLUSION

This study sought to determine whether a program of pre-operative physiotherapy improves lung function in morbidly obese candidates for bariatric surgery and compare the preoperative clinical and pulmonary function.

There were gains in volume and lung capacity without effects suggesting new statistical studies with a larger number of patients and longer intervention.

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ANALYSIS OF PULMONARY FUNCTION IN PATIENTS PRE-BARIATRIC SURGERY AFTER ROUTINE PHYSIOTHERAPY INTERVENTION

SUMMARY

Introduction: Obesity is a public health problem that involves a large number of Brazilians of all ages. It is the most important nutritional disorder in the developed world, with approximately 10% of its population are considered obese. In the individual with morbid obesity, excess stored fat in the abdominal cavity exerts direct mechanical effect on the rib cage and diaphragm, restricting chest expansion, with consequent reduction in lung volumes, even in the face of the respiratory system without pathological changes. Objective: To measure lung function by spirometry checking the contents of FVC, FEV1, FEV1/FVC, FEF 25-75 in patients pre-operative bariatric surgery. Methodology: The treatment was performed at the Rehabilitation Center of Assisi School Gurgacz - FAG sector in CardiopulmonaryPhysical Therapy. The sample consisted of nine women and three men 18 to 50 years, previously evaluated by the gastroenterologist, duly forwarded to FAG for physical therapy and released for physical activity in soil and pulmonary rehabilitation. All are in line to perform bariatric surgery. Results: Responses were analyzed and found himself Average FEV1 of ± 2.77, ± 3.01 for FVC, FEV1/FVC and FEF25 of ± 94.5% - 75% ± 2.28. Conclusion: This study answered the research objectives and proved to be beneficial when used as a means of preparation for the pre-operative bariatric surgery, with an increase lung capacity and volume of patients ventilated. It is suggested to repeat the study with a larger sample of individuals.

KEYWORDS: Cardiopulmonary Physical Therapy, Spirometry, Bariatric Surgery

ANALYSE DE LA FONCTION PULMONAIRE CHEZ LES PATIENTS PRÉ-CHIRURGIE BARIATRIQUE APRÈS INTERVENTION EN PHYSIOTHÉRAPIE COURANTES

SOMMAIRE

Introduction: L'obésité est un problème de santé publique qui implique un grand nombre de Brésiliens de tous âges. Il est le trouble le plus important de la nutrition dans le monde développé, avec environ 10% de sa population sont considérés comme obèses. Dans l'individu souffrant d'obésité morbide, l'excès de graisse stockée dans la cavité abdominale exerce un effet direct sur les mécaniques de la cage thoracique et le diaphragme, en limitant l'expansion thoracique, avec une réduction conséquente des volumes pulmonaires, même dans le visage du système respiratoire, sans modifications pathologiques. Objectif: mesurer la fonction pulmonaire par spirométrie vérifier le contenu de la FVC, FEV1, FEV1/FVC, DEM 25-75 chez les patients pré-opératoire de chirurgie bariatrique. Méthodologie: Le traitement a été effectué au Centre de réhabilitation d'Assise Ecole Gurgacz - secteur des FAG en physiothérapie cardio-respiratoire. L'échantillon se composait de neuf femmes et trois hommes de 18 à 50 ans, précédemment évaluées par le gastro-entérologue, dûment transmise à FAG pour la thérapie physique et libéré de l'activité physique dans le sol et la réadaptation pulmonaire. Tous sont en ligne pour effectuer la chirurgie bariatrique. Résultats: Les réponses ont été analysées et se trouva FEV1 moyenne de ± 2,77, ± 3,01 pour le CVF, DEM25 FEV1/FVC et de ± 94,5% - 75% ± 2,28. Conclusion: Cette étude a répondu aux objectifs de recherche et s'est avéré être bénéfique lorsqu'il est utilisé comme un moyen de préparation pour la chirurgie pré-opératoire bariatrique, avec une augmentation de la capacité pulmonaire et le volume de patients ventilés. Il est suggéré de répéter l'étude avec un plus grand échantillon d'individus.

MOTS-CLÉS: cardio-thérapie physique, la spirométrie, la chirurgie bariatrique

ANÁLISIS DE LA FUNCIÓN PULMONAR EN PACIENTES PRE-CIRUGÍA BARIÁTRICA DESPUÉS DE LA INTERVENCIÓN FISIOTERAPIA DE RUTINA

RESUMEN

Introducción: La obesidad es un problema de salud pública que involucra a un gran número de brasileños de todas las edades. Es el trastorno nutricional más importante en el mundo desarrollado, con aproximadamente el 10% de su población son considerados obesos. En la persona con obesidad mórbida, el exceso de grasa almacenada en la cavidad abdominal ejerce un efecto mecánico directo sobre la caja torácica y el diafragma, lo que restringe la expansión del tórax, con la consiguiente reducción de los volúmenes pulmonares, incluso en la cara del sistema respiratorio sin alteraciones patológicas. Objetivo: medir la función pulmonar mediante espirometría la verificación del contenido de la CVF, VEF1, VEF1/CVF, FEF 25-75 en pacientes pre-operatorio de cirugía bariátrica.Metodología: El tratamiento se realizó en el Centro de Rehabilitación de la Escuela de Asís Gurgacz - sector de FAG en Fisioterapia cardiopulmonar. La muestra constó de nueve mujeres y tres años los hombres de 18 a 50, previamente evaluados por el gastroenterólogo, debidamente remitido a FAG para terapia física y libertad para la actividad física en el suelo y la rehabilitación pulmonar. Todos están de acuerdo para llevar a cabo la cirugía bariátrica. Resultados: Las respuestas se analizaron y se encontró VEF1 promedio de ± 2.77, ± 3.01 para la CVF, VEF1/CVF y FEF25 de ± 94,5% - 75% ± 2.28. Conclusión: Este estudio responde a los objetivos de investigación y ha demostrado ser beneficioso cuando se usa como medio de preparación para la cirugía bariátrica antes de la operación, con un aumento de la capacidad pulmonar y el volumen de pacientes con ventilación mecánica. Se recomienda repetir el estudio con una muestra mayor de personas.

PALABRAS CLAVE: Terapia Física cardiopulmonar, espirometría, la cirugía bariátrica

ANALISE DA FUNÇÃO PULMONAR EM PACIENTES PRÉ-OPERATÓRIOS DE CIRURGIA BARIÁTRICA APÓS PROTOCOLO DE INTERVENÇÃO FISIOTERÁPICA

RESUMO

Introdução: A obesidade é um problema de saúde publica que envolve grande numero de brasileiros de todas as idades. É o distúrbio nutricional mais importante do mundo desenvolvido, já que cerca de 10% de sua população são considerados obesos. No indivíduo portador de obesidade mórbida, o excesso de gordura armazenada na cavidade abdominal exerce efeito mecânico direto sobre a caixa torácica e o músculo diafragma, restringindo a expansibilidade torácica, com conseqüente redução dos volumes pulmonares, mesmo diante do sistema respiratório sem alterações patológicas. Objetivo: Mensurar a função pulmonar através da Espirometria verificando os índices de CVF, VEF1, VEF1/CVF, FEF 25-75 em pacientes pré-operatórios de cirurgia bariátrica. Metodologia: O tratamento foi realizado no Centro de Reabilitação da Faculdade Assis Gurgacz - FAG no setor de Fisioterapia Cardiopulmonar. A amostra foi composta por 9 mulheres e 3 homens de 18 a 50 anos, avaliadas previamente pelo médico gastroenterologista, devidamente encaminhadas a FAG para tratamento fisioterapêutico e liberadas para a prática de atividade física em solo e reabilitação pulmonar. Todas se encontram na fila para realização de cirurgia bariátrica. Resultados: As respostas foram analisadas e encontrou-se a Média da VEF1 de ± 2,77; CVF de ± 3,01; VEF1/CVF de ± 94,5 e FEF25% - 75% de ± 2,28. Conclusão: Este estudo respondeu aos objetivos da pesquisa, mostrando-se benéfico ao ser utilizado como meio de preparação para o pré-operatório da cirurgia da obesidade, havendo aumento na Capacidade Pulmonar dos pacientes e do Volume Ventilado. Sugere-se a repetição do estudo com uma amostra maior de indivíduos.

PALAVRAS-CHAVE: Fisioterapia Cardiopulmonar, Espirometria, Cirurgia Bariátrica