78 - RELATION OF THE ABDNOMINAL CIRCUMFERENCE TO THE GLYCEMIC, HbA1c, CONSUMPTION OF FRUITS, VEGETABLES AND MEAT IN PATIENTS WITH METBOLIC SYNDROME IN SINOS VALE REGION, RS.

MAGNABOSCO FERNANDA S.; WEBER MARIA H.;
HÜBSCHER GILBERTI H.
Centro Universitário Feevale - Novo Hamburgo, RS, Brasil
gilberti@via-rs.net

Introduction

The Metabolic Syndrome (MS) represents a clinic illness characterized by a group of faktors such as artery hypertension, visceral obesity, insulin resistance (IR), aterogenic dislepidemic, markers of vascular inflammation and homeostasy of the glicose altered, which are added to the incresing risk of the coronary diseases (CD) and mellitus diabetes type 2 (DM2) (Silveira, 2008).

The development of the Diabete Mellitus type 2 is linked to the abdnominal obesity, once the high amount of abdnominal fatty tissue, specially the visceral fatty one, has been followed by the intolerance to glicose and hyperinsulin as a result of the resistance to insulin (Scarsella, Déprés, 2003). This is considered an important phisiopathogenic faktor in the Metabolic Syndrome (Picon et al., 20006). Sedentary is another risk faktor to the obesity so important as the consumption of the inappropriate diet that has a direct and positive relation to the enhancing of the Diabetes Millitus type 2 in adults, no matter the body index mass (BIM) or the family history of the Diabetes Mellitus (Mclellan et alt., 2007).

The treatment of the Metabolic Syndrome has the aim to improve the insulin resistance and its effects. The loss of weight represents the ground for the treatment (Uehara, Rosa; 2007) and the reduced consumption of hyperglicedes dietary (Santos et al., 2006).

Although many studies have investigated the role of the fruits consumption and vegetables in severe diseases (Liu et al., 2004), the information related directly to the fruit intake and vegetables for the risk of Metabolic Syndrome are scant; researches stress the benefits through the combination of antioxidants, fiber, potassium, magnesium and other phytochemical coumponds though the mecanisms have not been understood (Bozzano et al., 2002). The Appropriate food and the physical activity combined with other changes in the life style contribute to a better control of the illness preveiling its effects and increasing the quality of life (Castro et al., 2006; Gomes Tubino, 2006).

According to the explanation above, this study has the aim to relate glycemic, glycated hemoglobin, fruit intake, vegetables and meat with the abdominal circumference in patients with the metabolic syndrome in Sinos Vale Region, RS.

Methodology

It was observed the profile of the studied sample, considering the age, sex and th diagnosis of the Metabolic Sybdrome.

The investigative and descriptive study with a quantitative character without intervention has analyzed a sample encompassed by 84 patients; 47 female (F) and 37 male (M) with Metabolic Syndrome; age between 30 and 65, living in Sinos Vale Region, RS. The patients were evaluated separatedly and they underwent to the measure studies.

The data collection was taken place in March of 2007 up to November 2007. One applied the pattern measure of 80cm for women and 94cm for men to measure the abdominal circumfrence, (The International Diabetes Fderation (IDF), 2006). The measurement was made by means of a measure tape in the iliac crest and the back edge, the patient standing, wtithout clothes, the arms positioned beside the body and the in the breathing phase (Castro, Mato, Gomes, 2006).

The data collect of the material for the biochemical exams, fasting glycemic and glycated hemoglobin (Hba1c) were taken place after 12 hour fasting in the analysis of the laboratory of the Institution where they were asked in the first appointment.

According to the American Diabetes Association (2007), the values of the fasting glycemic should be $\leq$ 100mg/dl. The levels of the glycated hemoglobin (HbA1c) over 7% are related to a greater progressly risk of severe effects reaching up to 6% (American Diabetes Association, 2007).

The information about the patients food habits were made through the usual food inventory (inventory of 24 hours) and as the support role of the food inquiry which registered all the food consumption and its quantities during the different meals since he breakfast untill the supper.

The results obtained were analyzed by the Student Test 1 of a an average to note differences ($p<0.05$), and the SPSS (15.0) programm for Pearson Correlation.

Results:

One observed that the average was over ($p<0.05$) of the recommended one, being 41% for female and 21% for make. See (table 1below).
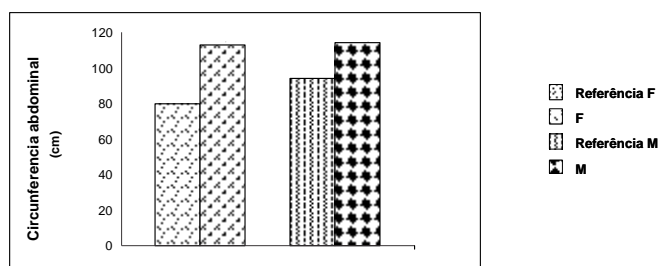

Table 1: Abdominal Circumference Average (cm) F=47, M=37
Reference value RV(2006)
*Significative difference of F and M ($p<0.05$) related to the reference

Concerning glycemic, the average was superior to ($p<0.01$) in 93% Femal (F) and 64% in Male (M) related to the utmost limit of the reference (100mg/dl.) of the American Diabetes Association (2007). See table 2 below.
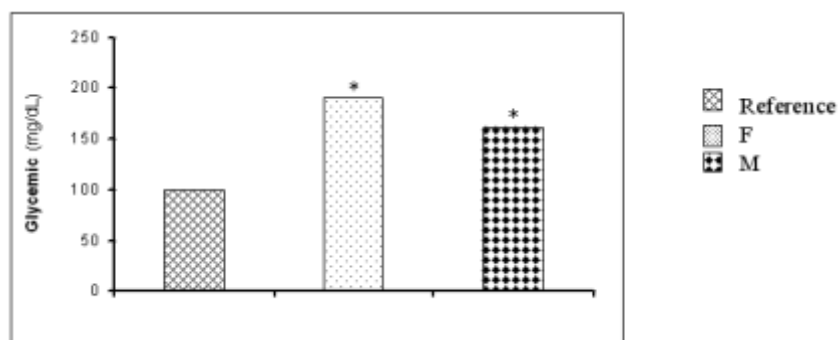
Table 2: Glycemic average of the different groups.
Female (F)=47 and Male(M)= 37
*Significant difference of F and M (p<0.01) related to the refference.

Having evaluated the HbA1c, one observed that the female group   was 43% (p<0.01) concerning the utmost limit of the reference and in th male group the average as 10% (table 3). The average for normal is 6% according to the Value for the American Diabetes Association Refernce (2007).
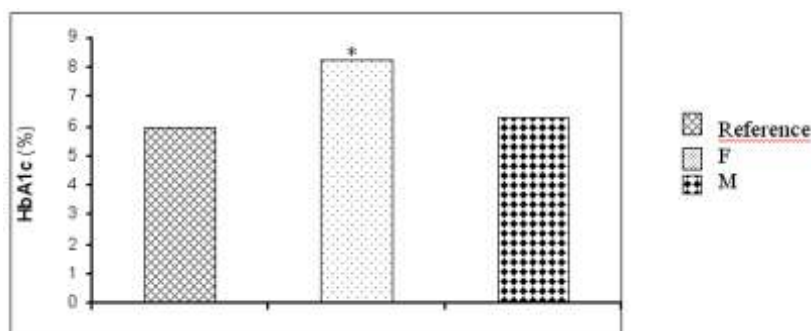

Table 3: HbA1c average of the different groups F=47 and M=37
*Significative difference of F (p<0.01) related to the reference

Concerning the food intake, it was observed that females fruit consumption was the average of 2 portions/daily, while males was 1,6 portions/daily. Females have the average vegtable consumption of 1.8 portions/daily and males 2 portions/daily. The meat intake shows similarities in both female and male groups; female (F) ad male (M) were 0.05 portions/daily (see table 1 below).

Table 1: Food intake of the groups

Alimentos	Média de Referência / dia (porções)	Média de Ingestão/ dia (porções)	
		Mulheres	Homens
Frutas	4	2,0*	1,6*
Vegetais	5	1,8*	2,0*
Carne Vermelha	1	0,5	0,5

F=47 and M=37
*Significative difference of the F and M (p<0.05) related to the reference

Discussion

Epidemic studies have revealed a number of women who face Metabolic Syndrome. This work has confirmed this trend. A great part of the adult population develops this syndrome, resulting of the genetics faktors, hormonal, physic sedentary and the excess of certain food consumptions or the lack of other food consumption which take part into a range of reaction, changing the physiology among them we might include the obesity (Kelly Gregory, 2000). There are strong evidences that abdominal obesity is a characteristic phenotype of insulin resistance which results in the Metabolic Syndrome and provoking other not transmitting severe disease (Scarsella, Després, 2003). We have observed on the study an enhancing of the abdominal fatty in the groups (´p<0.01) which have shown a strong correlation with the increasing of gyicemic (p<0.05). Having analyzed the HbA1c of the groups, we might show that the higher the CA, the greater the relation to this glycemic measure and thus the increasing of the RI, once in the females the CA and HbA1c were greater than in the Males.

Rezende and co-workers (2006) confirm these results in their studies. They have observed that the greater the obesity and CA, the more elevated the risk of Metabolic Syndrome faktors, among them we might mention the lipidic profile, gyicemic and RI. This increases the abdominal fatty intolerance to glicose, hyperinsulin and the metabolic changes, besides being important place to produce pro-trombotic molecules and inflammation as well.

The food causes such as the disminished consumption of fibers, vegetables, the excess of refined carbohydrates and the high level of protein intake favor the change of lipidic profile, the abdominal fatty, hypertension systemic coronary heart disease, tolerance to glicose is damaged, pro-trombotic and pro-inflammatory tendency; all those faktors characterize the metabolic symdrome (Pereira et al., 2002; Santos et al., 2006). Esmailzadeh and his team (2006) have shown in their studies that subjects with metabolic syndrome whose glicose and C-reactive protein, were higher presented daily intake of fruits and vegetables inferior related to the ones who have shown the metabolic lower changes , attributing these benefits to the antioxidant, fenolic components which reduce the inflammatory markers.

Other faktor concerning the effect on the glicose metabolism might be measured by means of absortion and slower intake because of the fiber, which migh result less necessity of secretion of insulin after the food intake (Bielsalski HK, 2004).

This study has evaluated the food intake, observing the fruit and vegetable consumption quite lower than the one foressen (p<0.01). This might point out a small amount of antioxidant and phytochemical components, taking the patients to a high production of free radical. I also favor much more the metabolic disease, besides the low consumption of fibers.

This study confirms the results that the core fatty makes a correlation with high glycemic associated to a poor food intake of fruits and vegetables that are importat due to the presence of bioacive components for the biochemic reactions and the high amount of fibers.

Conclusion:
The results show a low consumption of fruits and vegetables concerning patients with metabolic syndrome related to an increasing plasmatic concentration of the glycemic profile and adbominal circumference. This suggests an enhencing of those food intake which might be a preventive primary step of the metabolic syndrome on coronary heart illnesses.

Key words: Metabolic Syndrome, Abdominal Circumference, Food.

Referencies
SILVEIRA, V.M.F.; HORTA, B.L. Peso ao nascer e síndrome metabólica em adultos: meta-análise. **Revista de Saúde Pública**, São Paulo, vol.42, n.1, 2008.
SCARSELLA, C.; DESPRÉS, J.P. Treatment of obesity: the need to target attention on high-risk patients characterized. **Caderno de Saúde Pública.** vol.19, n.1, p.S7-S19, 2003.
PICCON, P.X; ZANATTA, C.M; GERCHMAN, F; ZELMANOVITZ, T; GROSS, J.L; CANANI, Analysis of the criteria used for the definition of metabolic syndrome in patients with type 2 diabetes mellitus. **Arquivo Brasileiro de Endocrinologia e Metabologia.** vol.50, n.2, p.264-70, 2006.
MCLELLAN, KÁTIA CRISTINA PORTERO, BARBALHO, SANDRA MARIA; CATTALINI MARINO; LERARIO, ANTONIO CARLOS. Diabetes mellitus do tipo 2, síndrome metabólica e modificação no estilo de vida. **Revista Nutrição**, vol. 20, n. 5, p. 450-55, 2007 .
UEHARA, S.K.; ROSA, G. Approaches to the treatment of Metabolic Syndrome. **Nutrire,** vol. 27, p.07,2007.
SANTOS, C.R.B.; PORTELLA, E.S.; ÁVILA, S.S.; SOARES, E.A. Fatores dietéticos na prevenção e tratamento de comorbidades associadas à síndrome metabólica. **Revista de Nutrição**, vol.19, n.3, p. 389-401, 2006.
LIU, S.; SERDULA, M.; JANKET, S.J.; COOK, H.D.; SESSO, W.C**.** A prospective study of fruit and vegetable intake and the risk of type 2 diabetes in women. **Diabetes Care.** Vol. 27, p.2993 6, 2004.
BAZZANO, L.A.; HE, J.; OGDEN, L.G. LORIA, C.M.; VUPPUTURI, S. Fruit and vegetable intake and risk of cardiovascular disease in US adults: the first National Health and Nutrition Examination Survey Epidemiologic Follow-up Study. **American Journal of Clinical Nutrition** vol. 76, p.93-9, 2002.
CASTRO, S.H.; MATO, H.J.; GOMES, M.B. Parâmetros antropométricos e síndrome metabólica em diabetes tipo 2. **Arquivo Brasileiro de Endocrinologia e Metabologia**, São Paulo, vol.50, n.3, p.450-55 2006.
GOMES TUBINO, M.J. The Culture of peace, Physical Education and Sports. **The FIEP bulletin,** Foz do Iguaçu**,** v.75, n.3, p.5-11, 2006.
The International Diabetes Federation (IDF), 2006.
American Diabetes Association**.** Diagnosis and Classification of Diabetes Mellitus. **Diabetes Care.** n.30, p.42-47, 2007.
KELLY, G.S. Insulin Resistance: Lifestyle and Nutritional Interventions. **Alternative Medicine Review**; vol.5, n.2. p.109-13, 2000.
REZENDE, F.A.C.; ROSADO,L.E.F.P.L.; RIBEIRO,R.C.L.; VIDIGAL, F.C.; VASQUES, A.C.J.; BONARD, I.S.; CARVALHO, C.R. Body Mass Index and Waist Circumference: Association with Cardiovascular Risk Factors. **Arquivo Brasileiro de Cardiologia.** Vol.87, n.6, p.666-71, 2006.
PEREIRA, M.A.; JACOBS, D.R.J.; VAN HORN, L.; SLATTERY, M.L.; KARTASHOV, A.I.; LUDWIG, D.S. Dairy consumption, obesity, and the insulin resistance syndrome in young adults: the CARDIA Study. **Journal of the American Medical Association,** vol.287, n. 16, p.2081-9, 2002.
ESMAILLZADEH Ahmad , Masoud Kimiagar, Yadollah Mehrabi, Leila Azadbakht, Frank B Hu, and Walter C Willett. Fruit and vegetable intakes, C-reactive protein, and the metabolic
Syndrome. **American Journal of Clinical Nutrition**, vol.84, p.1489 97, 2006.
BIELSALSKI HK. Diabetes preventive components in the Mediterranean diet. Review. **European Journal of Clinical Nutrition**, vol. 43, suppl 1, p.126-30, 2004.

RUA ALMIRANTE BARROSO, 735 / 205 - BAIRRO FLORESTA - 90.220-021 - PORTO ALEGRE - RS - BRASIL
nanda_smag@yahoo.com.br

RELATION OF THE ABDNOMINAL CIRCUMFERENCE TO THE GLYCEMIC, HbA1c, CONSUMPTION OF FRUITS, VEGETABLES AND MEAT IN PATIENTS WITH METBOLIC SYNDROME IN SINOS VALE REGION, RS.

Abstract
The metabolic syndrome (MS) represents a clinic disese characterized by a cluster of disease risk fakors related to coronary heart ones and diabetes mellitus type 2. The appropriate food intake has contributed for a better control of the illness. The aim of the study was to relate the glycemic, glycated hemoglobin (HbA1c). Fruits , vegetables and meat intake with th abdominal circumference (AC) in patients with metabolic syndrome in Sinos Vale Region, RS. The study has the descriptive characteristic of 84 patients, being n=37 Male (M) and n=47 female (F), age between 30 and 65, evaluating glicose and HbA1c with 12 hour fasting. The fruit intake, vegetables and meat were usual food inquiry of 24 hours and as support role the food inquiry. Th results obtained were analyzed by means of the Student t Test to find differences of an average (p<0.05). and the Pearson Correlation (programm SPSS 15.0). The measurements showed over the recommended one: CA (p<0.01) in 41% Female and 21% in male, the glycemic (p<0.05) 93% in Female and 64% in Male; the HbA1c was 43% in Female. Concerning the food intake one observed that the average of the daily/portions related to fruits in female were 2 and in male 1,6. The consumption of vegetables daily/portions in female and male were 1,8 and 2 repectively, quite below of the forecast. The results confirm the core fatty relation to the high glycemic and HbA1c in patients with metabolic syndrome and a poor food intake of fruits and vegetables are important because of the bioactive component presence and by the high amountof fibers. The increase of these food intake might be a primary preventive step of metabolic syndrome and coronary heart disease.

Key words: Metabolic Syndrome, Abdominal Circumference, Food.

RELATION DE TOUR DE TAILLE, AVEC DES NIVEAUX DE GLYCÉMIE, HbA1c, DE LA CONSOMMATION DE FRUITS, DE LÉGUMES ET DE VIANDE DANS PACIENTS AVEC LE SYNDROME MÉTABOLIQUE DANS LA RÉGION DO VALE DOS SINOS.

Résumé:

Syndrome métabolique (SM) est une situation clinique avec des facteurs de risque de maladies cardio-vasculaires et le diabète de type 2 sucré. Une nourriture suffisante pour nous d'avoir un meilleur contrôle de la maladie. L'objectif de cette étude était de rapporter le taux de glucose sanguin, glycated hémoglobine (HbA1c), la consommation de fruits, de légumes et de viande avec la circonférence abdominale (AC) chez les patients avec SM dans la région du Vale dos Sinos,RS.

On a évalué le CA, le glucose et le HbA1c (12 heures de jeûne) et de vérifier la consommation de fruits, de légumes et de viande a été utilisée de rappel alimentaire de 24 hereus (R24).

On a évalué le CA, le glucose et   la consommation de fruits, de légumes et de viande a été utilisée de rappel alimentaire de 24 heures (R24) et Inquerito alimentaire (IA) de 84 patients n= 37 les hommes (M = 47, de la femme (M) l'âge de 30 ans à 65 ans. Les résultats ont été analysés par le test t de Student pour les différences dans la moyenne (p <0,05). et de corrélation de Pearson (SPSS 15.0).

Les mesures ont été plus élevées que celles recommandées: CA (p <0,01) dans 41% (M) et 21% (H), du glucose dans le sang sur Elm 93% et 64% en F, et 43% en HbA1c dans M. Comme l'apport alimentaire a été noté que le nombre moyen de portions par jour de fruits a été de 2 à 1,6 pour H et M, les légumes et 1.8 (M) et 2 (F), bien au-dessous de l'recommandé. La consommation de viande similaire dans les deux groupes était de 0,5 portions par jour. Les résultats confirment que l'adiposité centrale a une corrélation avec les niveaux de glucose et de HbA1c chez les patients avec SM associé à un régime alimentaire dificiente dans les fruits et les légumes, importants en raison de la présence de composants bioactifs et la grande quantité de fibers. Cela donne à penser que l'augmentation de la ingestion de ces aliments peut être une mesure préventive dans le SM et les maladies cardiovasculaires.

Mots Clés: Syndrome métabolique, tour de taille, de l'Alimentation.

RELACIÓN DE LA CIRCUNFERENCIA DE LA CINTURA, CON NIVELES DE GLUCOSA EN SANGRE, HbA1c, CONSUMO DE FRUTAS, VEGETALES Y CARNES ROJAS EN PACIENTES CON SÍNDROME METABÓLICO DE LA REGIÃO DO VALE DOS SINOS.

Resumen:

El síndrome metabólico (SM) es una situación clínica con factores de riesgo para enfermedades cardiovasculares y diabetes mellitus tipo 2. La alimentación adecuada ha contribuido a un mejor control de la enfermedad. El objetivo de este estudio fue relacionar la glucosa en la sangre, hemoglobina glucosilada (HbA1c), la ingesta de frutas, vegetales y carne roja con la circunferencia abdominal (CA) en pacientes con SM en la región del Vale dos Sinos, RS. Fue evaluada la CA, la glucosa y la HbA1c (12 H ayuno) y para verificar el   consumo de frutas, verduras y carne roja se utilizó el Recordatorio Alimentario de 24 Horas (R24) y Inquerito Alimentario (IA) de 84 pacientes n = 37 Hombres (H) = 47 en Mujeres (M), edad 30 a 65 años. Los resultados fueron analizados por la prueba t de *Student* para diferencias de una media (p <0,05), y Correlación de Pearson (SPSS 15.0). Las medidas fueron superiores a las recomendadas: CA (p <0,01) en 41% (M) y 21% (H), glucosa en la sangre en el M 93% y 64% en H, y 43% en HbA1c F. En cuanto la ingesta de alimentos se observó que el promedio de raciones/día de las frutas fue 2 para M y 1,6 para H, y los vegetales 1,8 (M) y 2 (H), muy por debajo del recomendado. El consumo de carne roja fue similar en ambos grupos, 0,5 porciones/día. Los resultados confirman que la adiposidad central tuvo una correlación con los niveles de glucosa y la HbA1c en pacientes con SM asociado con una dieta deficiente en frutas y verduras, importantes por la presencia de componentes bioactivos y la gran cantidad de fibras. Esto sugiere que el aumento de la ingesta de estos alimentos puede ser una medida preventiva en la SM y en la enfermedad cardiovascular.

Palabras clave: Síndrome Metabólico, Circunferencia de la Cintura, Alimentos.

RELAÇÃO DA CIRCUNFERÊNCIA ABDOMINAL, COM GLICEMIA, HbA1c, CONSUMO DE FRUTAS, VEGETAIS E CARNE VERMELHA EM PACIENTES COM SÍNDROME METABÓLICA DA REGIÃO DO VALE DOS SINOS.

Resumo:

A Síndrome Metabólica (SM) representa uma situação clínica caracterizada por um agrupamento de fatores de risco de doenças cardiovasculares e diabetes mellitus tipo 2. A alimentação adequada tem contribuído para um melhor controle da doença. O objetivo foi relacionar a glicemia, hemoglobina glicada(HbA1c), ingestão de frutas, vegetais, e carne vermelha com a circunferência abdominal (CA) em pacientes com SM da região do Vale dos Sinos, RS. Estudo de característica descritiva, 84 pacientes n=37 masculino (M) e n=47 feminino (F), idade 30 a 65 anos, onde avaliamos a CA, a glicose e HbA1c com 12 hs jejum. A ingestão de frutas, vegetais e carne vermelha foi por recordatório alimentar habitual de 24 h e como coadjuvante o inquérito alimentar. Os resultados obtidos foram analisados pelo teste *t Student* para detectar diferenças de uma média (p< 0.05), e Correlação de Pearson (programa SPSS 15.0). As medidas se mostraram acima do recomendado: CA (p< 0.01) em 41% no F e 21% no M, a glicemia (p< 0.05) 93% no F e 64% no M, e a HbA1c 43% no F. Quanto a ingestão alimentar observamos que a média das porções/dia em relação as frutas no F foram 2 e no M 1,6. Para vegetais, o consumo de porções/dia do F e M foram 1,8 e 2, respectivamente, bem abaixo do preconizado. A carne vermelha mostrou-se semelhante em ambos os grupos, 0.5 porções/dia. Neste estudo os resultados confirmam que a adiposidade central faz uma correlação com glicemia e HbA1c elevada em pacientes com SM associada a uma alimentação deficiente em frutas e vegetais que são importantes pela presença de componentes bioativos, e pela elevada quantidade de fibras. Isto sugere que o aumento da ingestão destes alimentos pode ser uma medida preventiva primária na SM e em doenças cardiovasculares.

Palavras chave: Síndrome Metabólica, Circunferência Abdominal, Alimentos.