WEIGHT AND WEIGHT VARIABILITY CORRELATION WITH SUBCLINICAL INFLAMMATION AND COMORBIDITIES IN TYPE 2 DIABETES, RETROSPECTIVE ANALYSES OVER A DECADE

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BACKGROUND

Obesity and overweight management in type 2 diabetes (T2DM) improve the glycemic control and is associated to positive results in other cardiovascular risk factors.

OBJECTIVES

Evaluate the impact of weight and weight variability in subclinical inflammation and in the comorbidities of T2DM patients, over the last decade.

METHODS

Selection
- Diagnosis of T2DM
- Visits to our outpatient clinic between January 2005 and December 2014.

Inclusion
- A minimum follow-up of 2 years
- A minimum of 5 visits during the follow-up

Exclusion
- Age under 18 years old
- Secondary diabetes
- BMI > 40 Kg/m²

Variables Acessed

Biometry	Comorbidities	Inflammatory markers
• Weight	• HbA1c	• CRP, ESR
• BMI	• Blood Pressure	• Uricemia
• Weight variation	• Lipid Profile	• Monocyte count
• Waist	• Renal function	• Albuminuria

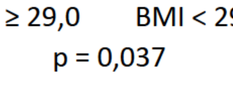
Descriptive statistical methods were used; T-test and Pearson's correlations where used for continuous variables. Statistical significance was admitted to p values < 0,05.

Variations were calculated using the standard deviation (STD) of the referred variable for each patient, using all determinations over the follow-up time.

RESULTS

Population analysis

- Total of patients acessed:
  1900 patients
- Follow-up time, mean:
  7,3 ± 1,1 (2-38) years
- Age, mean at first visit:
  61.2 +/- 0,3 years old
- Gender



1131 females (60%)

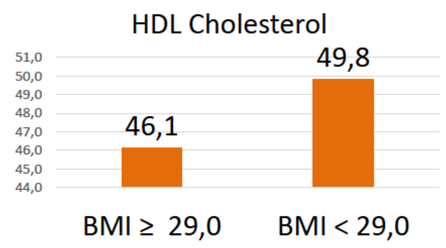
769 males (40%)

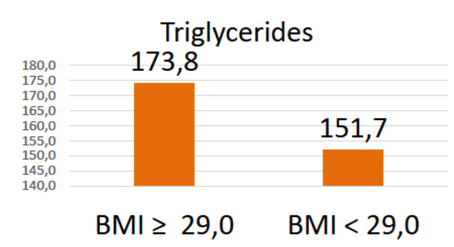
- Descriptive analysis of the variables acessed:

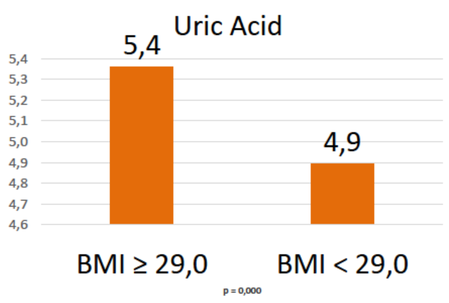
Variable (units)	Weight (Kg)	Weight Variation (STD)	BMI (Kg/m2)	BMI Variation (STD)	SBP (mmHg)	DBP (mmHg)	Chol (mg/dl)	TGL (mg/dl)	HDL (mg/dl)	LDL (mg/dl)	Non-HDL (mg/dl)	Fasting Glucose (mg/dl)	F. Gluc. Variation (STD)	HbA1c (%)	HbA1c Variation (STD)
Median	75,7	2,4	29,0	1,0	143,3	80,0	184,0	134,4	46,7	106,0	79,6	146,5	35,9	7,4	0,8
Std. Error of Mean	0,5	0,1	0,2	0,0	0,6	0,4	0,8	2,2	0,3	0,7	1,2	0,9	0,6	0,0	0,0
Minimum	44,0	0,0	18,8	0,0	85,0	43,5	91,0	33,2	10,3	47,2	7,1	65,3	1,5	3,4	0,0
Maximum	126,7	25,8	39,7	10,0	208,0	163,0	427,8	1482,1	143,5	322,0	251,6	383,0	214,1	15,0	12,2

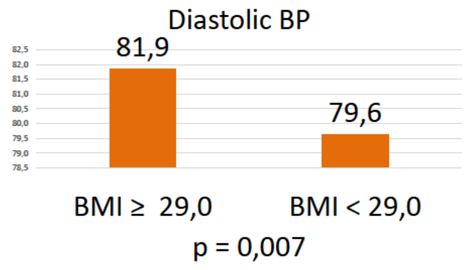
Variable (units)	Waist (cm)	Creatinine (mg/dl)	CKD-EPI (ml/min/m²)	Uric Acid (mg/dl)	AST (U/L)	ALT (U/L)	GGT (U/L)	BUN (mg/dl)	Albumina (mgA/gCr)	CRP (mg/l)	ESR (mm/h)	WBC (x10³/ul)	Lymphocytes (%)	Neutrophils (%)	Monocytes (%)
Median	99,5	0,9	73,6	5,2	25,0	30,0	29,8	42,3	17,2	0,7	16,0	7,4	30,5	58,0	7,9
Std. Error of Mean	0,7	0,0	0,4	0,0	0,5	0,8	3,4	0,7	9,5	0,0	0,9	0,1	2,9	0,3	0,1
Minimum	63,0	0,4	6,0	1,0	6,6	6,0	10,0	12,0	0,8	1,0	2,0	2,8	12,0	8,0	2,3
Maximum	165,0	6,9	116,0	11,4	204,8	389,2	2848,0	221,0	6065,6	7,2	120,0	52,3	87,2	89,0	29,0

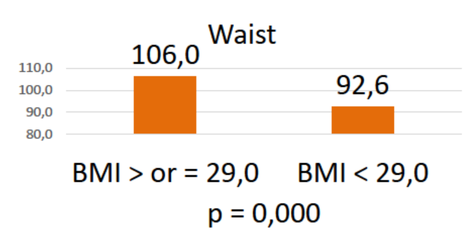
- Correlation with BMI median



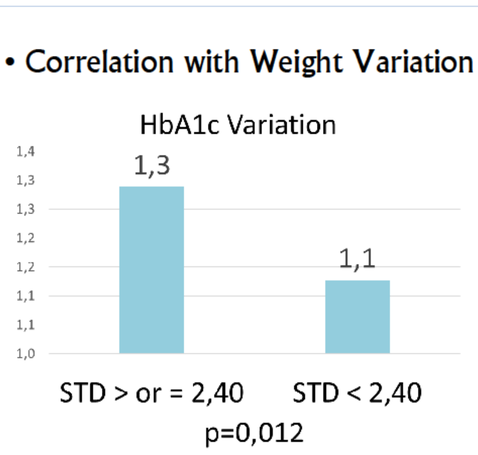


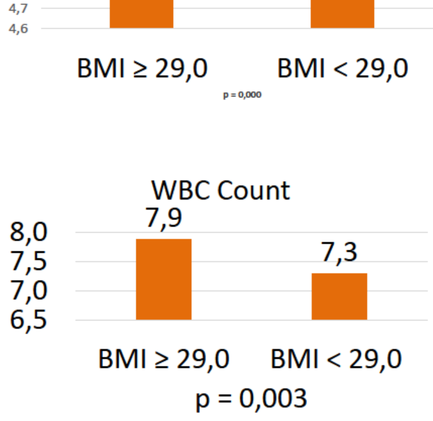




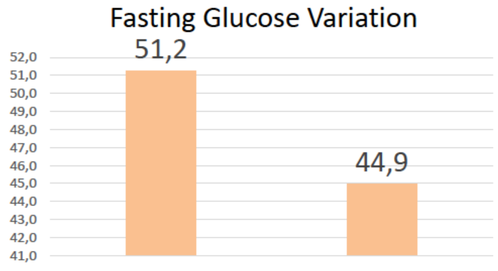


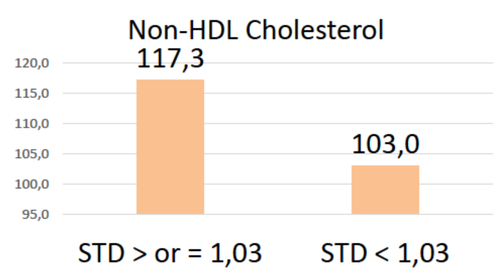
- Correlation with Weight Variation

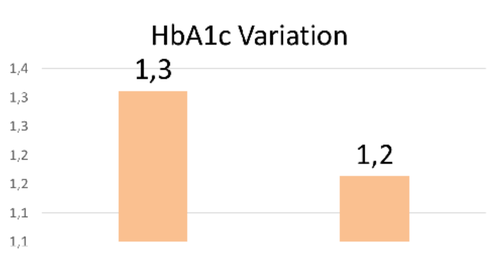


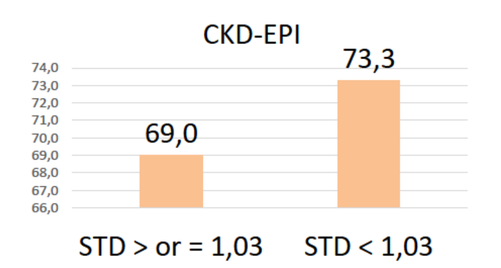


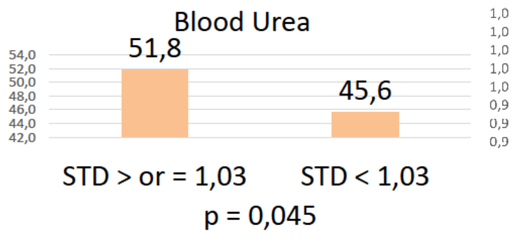
- Correlation with BMI Variation

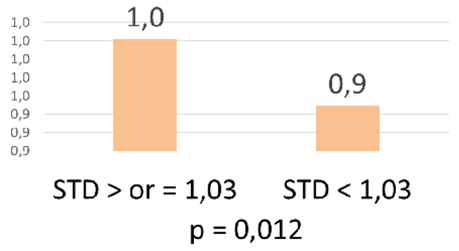












CONCLUSIONS

Pearson's correlations results indicate a statistically significant relationship between BMI and BMI variation for Systolic Blood Pressure (p <0,001 and p =0,036), Fasting Glucose and it's variation (p=0,004 and p=0,01).

In this analysis there was also a statistically significant relationship between BMI and Diastolic blood pressure (p <0,001), Creatinine (p=0,049), Uric acid (p <0,001); Albuminuria (p <0,01), HDL (p 0,015), Triglycerides and non-HDL cholesterol (p <0.01), Monocytes (p 0.008), waist (p=0,00) and Pulse pressure (p=0,012).

Despite the limitations inherent to the fact that it is a retrospective study, this analysis allows an insight to the issue due to the data volume. The BMI and its variability in this population was strongly associated with the variation of HbA1c, chronic inflammatory markers, creatinine and lipid panel, particularly in non-HDL cholesterol.

17 ECE
541--EP
Diabetes (complications & therapy)
Catarina Roque
DOI: 10.3252/pso.eu.17ece.2015
Poster presented at: ECE2015 16-20 May 2015 DUBLIN, IRELAND 17th EUROPEAN CONGRESS OF ENDOCRINOLOGY
PosterSessionOnline.com