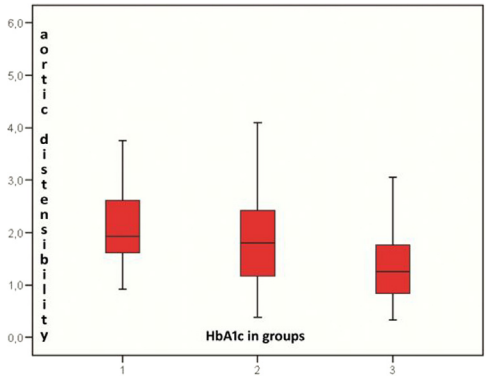
also correlated with DM duration (r=-0,172; p: 0,05) and age (r=-0,27; p:0,006). Significant correlation was determined between aortic strain and fasting blood glucose, HbA1c level and DM duration (respectively r=-0,265; p:0,008, r=0,279; p:0,005 ve r=-0,14; p:0,03) (Table 3 and Figure 2).

Conclusion: In this study, we showed that aortic stiffness was increased in newly diagnosis diabetes mellitus. Echocardiographically noninvasive evaluation of aortic stiffness may be helpful in estimation of cardiovascular risk in patients with diabetes mellitus.



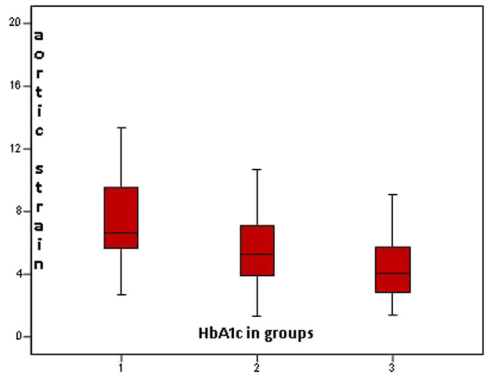


Table 1. Clinical and laboratory findings of the patients

	I n: 15 Median (Min-Max)	II n: 31 Median (Min-Max)	III n: 54 Median (Min-Max)	p value
Age (year)	52.8 (39-72)	57,8 (45-72)	58,4 (39-80)	0,217
HT duration (year)	2,4 (0-10)	4,5 (0-20)	5,1 (0-20)	0,188
DM duration (year)	3,9 (1-7)	5,6 (1-30)	8,0 (1-20)	0,009
T.chol (mg/dl)	181,6 (114-236)	191,8 (111-297)	193,6 (115-280)	0,558
LDL (mg/dl)	104,0 (62-176)	115,5 (47-191)	115,4 (55-183)	0,409
HDL (mg/dl)	47,6 (28-101)	45,6 (30-74)	40,5 (24-62)	0,174
Triglyseride (mg/dl)	150,0 (75-266)	157,7 (68-324)	194,0 (56-8639)	0,305
HsCRP	2,27 (0-6)	2,14 (0-11)	12,8 (0-529)	0,343
BMI (kg/m2)	26,8 (23-35,5)	30,3 (28,2-39,4)	30,78 (28,8-38,6)	0,365
FBG (mg/dl)	117,5 (89-155)	135,5 (94-223)	209,9 (101-412)	<0,001

HT: hypertension, DM: diabetes mellitus, T.chol: total cholesterol, LDL: low density lipoprotein, HDL: high density liporotein, hsCRP: high sensitive C reactive protein, BMI: body mass index, FBG: fasting blood glucose.

Table 2. Echocardiographic and blood pressure parameters of the patients

	Group 1	Group 2	Group 3	p value
Aortic diastolic diameter (cm)	3,29 (2,8-3,9)	3,38 (2,8-4,2)	3,42 (2,6-4,7)	0,585
Aortic systolic diameter (cm)	3,56 (3,0-4,5)	3,59 (3,0-4,5)	3,58 (2,7-4,8)	0,918
Aortic systolic-diastolic diameter(cm)	0,27 (0,11-0,60)	0,21 (0,04-0,62)	0,15 (0,06-0,40)	0,001
Systolic blood pressure (mmhg)	133 (92-190)	129 (100-156)	132 (95-188)	0,759
Diastolic blood pressure (mmhg)	80 (60-110)	79 (50-113)	79 (43-103)	0,898
Pulse pressure (mmhg)	54 (24-90)	49 (26-75)	53 (25-88)	0,558
Aortic distensibility ($cm^2/dyn/10^3$)	2,48 (0,92-5,74)	1,93 (0,39-4,1)	1,45 (0,334,26)	0,002
aortic strain (%)	7,48 (2,69-13,3)	6,0 (1,33-16,6)	4,54 (1,4-11,0)	0,001

Table 3. The relation between aortic stiffness parameters and demographic characteristics of the patients

	Aortic distensibility		Aortic strain	
	r value	p value	r value	p value
Age (year)			0.183	0.69
DM duration (year)	-0,172	0,05	-0.148	0.03
HT duration (year)	0,51	0.613	0.47	0.645
FBG (mg/dl)	-0,292	0.003	-0.265	0.008
Total cholesterol (mg/dl)	0.30	0.768	0.27	0.79
LDL (mg/dl)	0.54	0.591	0.21	0.834
HDL (mg/dl)	0.142	0.16	0.115	0.253
Triglyceride (mg/dl)	-0.123	0.224	-0.104	0.301
BMI (kg/m2)	0.30	0.77	0.09	0.32
hsCRP	-0.150	0.136	-0.163	0.106
HbA1c	0.283	0.004	0.279	0.005

DM: diabetes mellitus, T: hypertension, LDL: low density lipoprotein, HDL: high density liporotein, hsCRP: high sensitive C reactive protein, BMI: body mass index, FBG: fasting blood glucose.

PP-216

Atrial Functions in Prediabetic Patients

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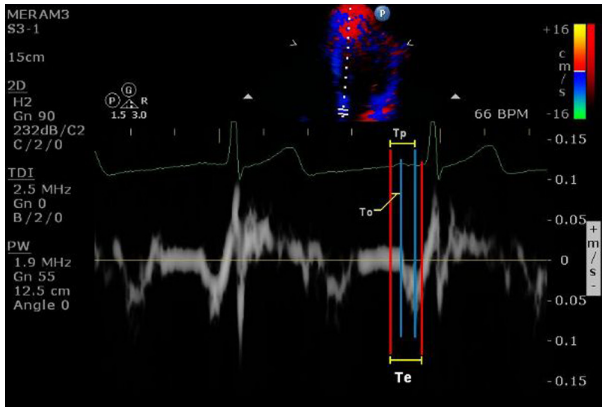
Introduction: It is well known that diabetes leads to impairment of atrial fuctions. Nevertheless, impaired atrial function is an independent predictor of atrial fibrillation. Although there are several studies demonstrating impaired atrial functions in diabetic patients, data regarding pre-diabetic (Pre-DM) patients are scarce. The aim of this study was to evaluate atrial functions including mechanical and tissue doppler parameters in pre-diabetic patients.

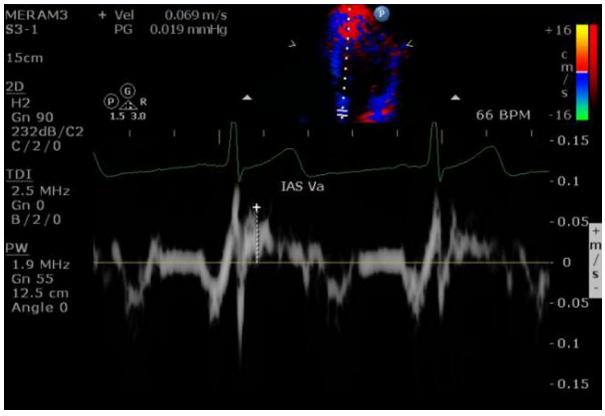
Methods: We enrolled 80 patients diagnosed with pre-diabetes and 40 controls with normal glucose levels. Pre-diabetes was diagnosed according to American Diabetes Association (ADA-2013) guidelines. According to the ADA guidelines 27 of our patients were isolated in the impaired fasting glucose group (i-IFG) pre-dm and 53

were in the combined group (fasting plasma glucose levels of 100 mg/dl to 125 mg/dl and oral glucose tolerance test values of 140 mg/dl to 199 mg/dl) pre-dm (Totally 80 pre-dm patients). Atrial tissue doppler parameters were measured with transthoracic echocardiography. Both left and right atrial measurements were performed at peak regional atrial contraction velocity (Va), which reflects atrial systolic functions, atrial mechanical times (The time between the onset of P wave on the surface ECG to the onset to peak Tp, the end of the atrial contraction (Te), and atrial mechanical functions (derived from atrial volumes, which are indexed to body surface area) were compared between groups (figures 1, 2).

Results: The main demographic characteristics were comparable between groups. There was no significant difference between control and i-IFG group pre-dm in all atrial parameters. Also there was no significant difference between groups in terms of Va (Table). But To and Te values were significantly higher in pre-dm patients compared with control group (Table). These differences were clearly seen between the control group and the combined group pre-dm subjects. Of the atrial mechanical functions, passive empting fraction and diastolic emptying fraction were significantly decreased in pre-dm patients (especially in combined group pre-dm) compared with controls (19.2±7.9 vs. 25.9±7.5 mL/m^2, p<0.001 and 43.6±13.8 vs 34.4±5.9 ml/m^2, p=0.001, respectively) (Table).

Conclusions: Atrial functions are impaired in the pre-diabetic period before development of overt diabetes. This condition is an evidence of that chronic hyperglycemia may contribute to atrial re-modeling with numerous mechanisms before development of diabetes mellitus.





Table

Variables	Control (n=40)	Pre-DM (n=80)	P values
IAS Va(cm/s)	8.14±2.2	8.59±2.1	0.29
LA Va(cm/s)	8.97±2.1	9.62± 2.0	0.11
RA Va (cm/s)	11.07±2.2	11.28±2.2	0.64
IAS To (ms)	28.5±7.3	34.2±10.7	0.003
IAS Tp (ms)	82.95±15.2	86.78±20.9	0.26
IAS Te (ms)	123.1±13.3	134.7±23.7	0.001
LA To (ms)	29.58±8.8	36.11±10.23	0.001
LA Tp (ms)	88.85±16.5	96.75±24.4	0.07
LA Te (ms)	124.85±16.2	139.81±24.6	p<0.001
RA To (ms)	28.40±7.6	32.68±9.8	0.01
RA Tp (ms)	88.03±14.6	92.96±26.2	0.20
RA Te (ms)	130.50±14.0	145.4±29.4	p<0.001
Passive emptying fraction(%)	19.2±7.9	25.9±7.5	p<0.001
Diastolic emptying fraction(%)	43.6±13	34.4±5.9	0.001
Active emptying fraction (%)	22.8±7.6	27.2±13.7	0.09

Comparison of atrial functions. Pre-DM,prediabetes; IAS,inter-atrial septum; LA-left atrium; RA-right atrium; Va-regional atrial contraction peak velocity; The time between the onset of P wave on the surface ECG to the onset To, to peak Tp, and end of the atrial contraction Te.

POSTERS

PP-217

Epicardial Fat Thickness in Patients with Chronic Obstructive Pulmonary Disease along with Right Ventricular Systolic Dysfunction

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The relationship between epicardial fat tissue (EFT) and left ventricular (LV) dysfunction, cardiovascular metabolism, and coronary artery disease is well known. The objective of this study was to evaluate EFT in patients with chronic obstructive pulmonary disease (COPD) who also have right ventricular systolic dysfunction (RVSD).

This observational study was comprised of 98 patients with COPD and 40 healthy controls, who were divided into groups according to fractional area changes (FACs) in order to evaluate right ventricular functions. Subgroup analysis was performed according to degree of RVSD in the patients with COPD (RVFAC<17%, 25-31%, or 32-60%). Statistical analysis was performed using Student's t-test, the Mann-Whitney U test, and a chi-square test along with the Kruskal-Wallis one-way analysis of variance (ANOVA) and one-way ANOVA post-hoc tests.

The EFT decreased in the patients with COPD compared with the control group (4.92±1.2 versus 6.35±1.1, respectively; p=0.001), and the mean EFT was 4.1±0.77 mm in patients with severe RVSD and 5.48±1.28 mm in patients with mild RVSD (p <0.001). The difference among the three groups was independent of body mass index (BMI).

Our data points to the fact that the EFT decreases in patients with COPD who have RVSD and that it is also a predictor for the degree of RVSD.