Correlations of Oxidized Low Density Lipoprotein with Insulin, Leptin and Risk

woman was considered obese diabetic when her Body Mass Index (BMI) which is equal to the weight divided by height squared is above 30 kg /m² and fasting blood glucose is above 7 mmol/L. Age of diabetes is below 5 years and the woman has no other metabolic and physical pathology except diabetes and obesity. We eliminated women using contraception and/or with a family history of obesity, diabetes, dyslipidemia, high blood pressure, cardiovascular diseases.

Women selected for the survey were previously informed of the objectives of the work. As for women of the control group, they were recruited among accompanist of patients from care unit "C" service diseases nutrition and dietary therapy at the National Institute of Nutrition, who agreed to participate in the survey by receiving as motivation the results of classical biological tests: blood glucose, HDL cholesterol, LDL cholesterol, triglycerides. Women in control group were matched to cases by age. T e same exclusion criteria considered for cases were used for the control group. It should be noted that at the beginning of our investigation we had the approval of 55 women who were considered healthy a f er physical examination by the team doctor, but about 50% of them were eliminated a f er

Weight (Kg)	Control	21	37.81 ± 8.95	-3
	Obese diabetic	53	93.28 ± 13.72	
	Control	21	72.29 ± 8.30	

CHOL	Pearson Correlation	1	0.452*	-0.208	0.371	-0.311	-0.356	-0.410	-0.226	-0.361	-0.262
	Sig. (bilateral)	.	0.040	0.367	0.098	0.170	0.113	0.065	0.324	0.107	0.250
TG	Pearson Correlation	0.452*	1	-0.097	0.073	-0.061	0.139	0.190	0.188	-0.027	0.093
	Sig. (Bilateral)	0.040	.	0.676	0.755	0.792	0.548	0.409	0.414	0.909	0.690
Blood glucose	Pearson Correlation	-0.208	-0.097	1	-0.315	0.187	0.508*	0.531*	0.481*	0.400	0.698**
	Sig. (bilateral)	0.367	0.676	.	0.164	0.418	0.019	0.013	0.027	0.072	0.000
HDLCHOL	Pearson Correlation	0.371	0.073	-0.315	1	-0.403	-0.346	-0.412	-0.327	-0.399	-0.365
	Sig. (bilateral)	0.098	0.755	0.164	.	0.070	0.124	0.063	0.148	0.074	0.103
LDLCHOL	Pearson Correlation	-0.311	-0.061	0.187	-0.403	1	0.617**	0.569**	0.469*	0.700**	0.428*
	Sig. (bilateral)	0.170	0.792	0.418	0.070	.	0.003	0.007	0.032	0.000	0.053
BMI	Pearson Correlation	-0.356	0.139	0.508*	-0.346	0.617**	1	0.955**	0.959**	0.857**	0.924**
	Sig. (bilateral)	0.113	0.548	0.019	0.124	0.0 (bilateral)	0.0 (bilateral) (bilateral) (bilateral)				

CHOL	Pearson Correlation	1	0.538**	-0.034	0.096	0.192	-0.118	0.042	0.106	0.000	0.036
	Sig. (bilateral)	.	0.000	0.811	0.496	0.169	0.402	0.767	0.449	0.999	0.793
TG	Pearson Correlation	0.538**	1	0.090	-0.021	0.052	0.207	0.075	0.082	0.166	0.069
	Sig. (bilateral)	0.000	.	0.523	0.880	0.710	0.138	0.593	0.561	0.234	0.621
Blood glucose	Pearson Correlation	-0.034	0.090	1	-0.396**	0.277*	0.408**	0.673**	0.546**	0.327*	0.814**
	Sig. (bilateral)	0.811	0.523	.	0.003	0.045	0.002	0.000	0.000	0.017	0.000
HDLCHOL	Pearson Correlation	0.096	-0.021	-0.396**	1	-0.261	-0.345*	-0.394**	-0.261	-0.334*	-0.361*
	Sig. (bilateral)	0.496	0.880	0.003	.	0.059	0.011	0.004	0.059	0.015	0.008
LDLCHOL	Pearson Correlation	0.192	0.052	0.277*	-0.261	1	0.365**	0.459**	0.624**	0.753**	0.538**
	Sig. (bilateral)	0.169	0.710	0.045	0.059	.	0.007	0.001	0.000	0.000	0.000
BMI	Pearson Correlation	-0.118	0.207	0.408**	-0.345*	0.365**	1	0.436**	0.403**	0.632**	0.483**
	Sig. (bilateral)	0.402	0.138	0.002	0.011	0.007	.	0.001	0.003	0.000	0.000
LEPTIN	Pearson Correlation	0.042	0.075	0.673**	-0.394**	0.459**	0.436**	1	0.839**	0.318*	0.877**
	Sig. (bilateral)	0.767	0.593	0.000	0.004	0.001	0.001				

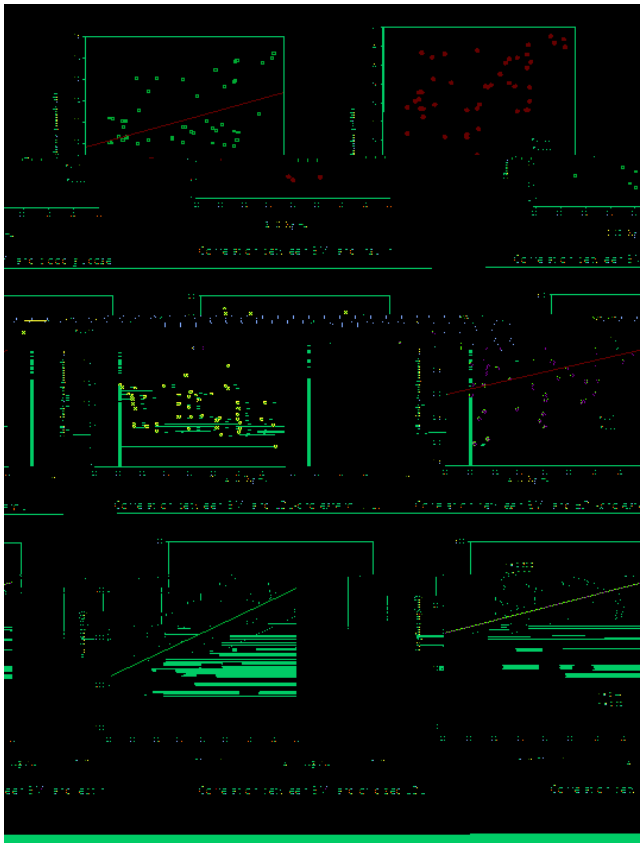

Figure 1: Correlations between BMI and biochemical parameters in the group of obese diabetics.

We performed a multivariate logistic regression analysis with top-down method to determine parameters most directly related to BMI in obese women with diabetes (Table 5).

			B	Erreur standard	Bêta	P
1	(Constant)	25.449	4.491		5.667	0.000
	Blood glucose	1.19E+00	0.364	0.000	0.003	0.997
	Hdlchol	-0.300	1.519	-0.023	-0.197	0.844
	Ldlchol	-2.505	1.093	-0.401	-2.292	0.027
	Leptin	0.377	0.184	0.460	2.045	0.047
	Insulin	-0.143	0.220	-0.142	-0.649	0.520
	Ox-LDL	4.57E+01	0.009	0.848	5.192	0.000

p=0.003), insulin (r=0.955, p<0.001), leptin (r=0.955, p<0.001), and oxidized LDL (r=0.857, p<0.001). Leptin was signifcantly

p=0.003). CHOL was signifcantly correlated with TG (r=0.538, p<0.001).

So according to our results, BMI is correlated with a group of biochemical parameters: blood glucose, leptin, insulin, LDL-CHOL, oxidized LDL (positive correlations) and HDL-CHOL (negative correlations). These parameters are correlated between each other, but their relationships with BMI are not identical. This leads us to suppose that some of these parameters are not directly related to BMI but through other parameters. We are interested to look for parameters most strongly associated with BMI and obesity. We performed a multivariate logistic regression analysis with top-down approach.

We introduced BMI as the dependent variable and each of the biochemical variables correlated with BMI (glucose, HDL-cholesterol, LDL-cholesterol, leptin, insulin and oxidized LDL) as explanatory variables. We found that oxidized LDL, leptin and LDL-CHOL are most directly correlated with BMI parameters. So obesity refects circulating levels of leptin, LDL-CHOL and oxidized LDL. BMI measured easily predicted rates of these biochemical parameters