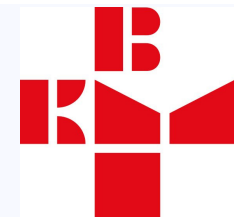




Cardioprotective effect of liraglutide is amplified with anti-inflammatory and decreased brain natriuretic peptide levels, in addition to glycemia and body weight reduction.



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Nothing to disclose by any author(s).

PURPOSE

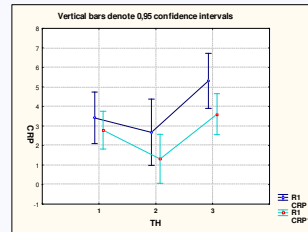
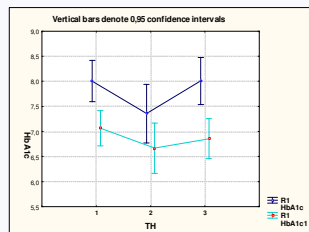
Besides an impact on glycemic control and body weight, incretins emerged as important factors in cardiovascular (CV) protection in diabetes. Dipeptidyl peptidase-4 (DPP-4) inhibitors cleave multiple peptides, which in turn have direct effect on the heart and blood vessels. This distinguishes them in action when compared to GLP-1 agonists. The aim was to compare the impact of DPP-4 inhibitors and GLP-1 agonist liraglutid on CV risk factors.

METHODS

A total of 442 type 2 diabetics were studied during a 6-month period and assigned into three study groups treated with DPP-4 inhibitors: linagliptin (Group [Gr] 1; n=158), vildagliptin (Gr 2; n=150) and with GLP-1 agonist liraglutide (Gr 3; n=134). Adiponectin (ApN), brain natriuretic peptide (BNP), high specific C-reactive protein (hsCRP), blood pressure (BP), glycated haemoglobin (HbA1c) and other CVR factors were determined at the beginning and at the end of the follow-up period. Differences for the analyzed variables between baseline values and values after 6 months were tested by t paired test.

Clinical and laboratory data of the patients at the beginning and at the end of the study according to the treatment groups						
Variables	Treatment groups					
	Linagliptin		Vildagliptin		Liraglutide	
	Beginning	End	Beginning	End	Beginning	End
ApN	7,04±3,39	6,78±3,43	5,69±2,32	5,95±3,05	4,80±1,43	6,01±3,29
ADMA	0,56±1,14	0,48±0,05	0,49±0,06	0,43±0,04	0,54±0,04	0,49±0,05
FIB	3,47±0,89	2,96±0,92	2,86±0,48	2,71±0,3	3,74±0,72	3,49±0,85
HCY	16,78±6	17,21±6,06	14,26±4,69	15,4±4,17	13,44±4,3	15,28±2,93
A/K	10,22±33,62	11,36±36,57	3,92±6,45	5,14±10,82	7,24±13,43	8,44±18,7
SBP	136,94±16,64	135,28±11,69	137,5±16,87	128,5±11,8	130,36±11,84	126,64±9,49
DBP	82,78±9,28	82,5±7,52	87,3±8,92	80±8,5	80,36±8,2	81,07±7,38
HDL	1,28±0,29	1,3±0,32	1,4±0,38	1,36±0,49	1,17±0,28	1,21±0,23
LDL	3,17±1,03	2,83±1,63	3,17±1,32	2,4±0,86	2,74±0,67	2,58±0,95
Tg	2,70±1,64	2,2±0,68	2,29±2,29	1,72±0,79	2,4±1,2	1,73±0,49
GGT	47,74±41,6	48,06±41,97	34,67±17,92	30,78±17,01	53,75±45,72	45,33±36,39
BMI	30,36±3,54	30,73±3,68	28,48±3,48	28,41±3,93	39,29±4,52	36,64±5,06

ApN – adiponectin (µg/ml), ADMA - asymmetric dimethylarginine (µmol/L), FIB – fibrinogen (g/L), HCY - homocystein (µmol/ml, A/K – albumin/creatinine ration (mg/mmol), SBP – systolic blood pressure (mmHg), DBP - diastolic BP, HDL - high density lipoprotein (mmol/L), LDL - low density lipoprotein (mmol/L), Tg – triglycerides (mmol/L), GGT - gamma-glutamyl transpeptidase (J/L), BMI - body mass index (kg/m²)



RESULTS

- Hs-CRP mean values at the beginning of the study were 3.86±3.64, 2.67±2.52 and 5.31±2.37 in the Gr 1, 2, 3 respectively, and were significantly reduced by 0.63 (95% CI: 0.1-1.15; p=0.018), 1.35 (95% CI: -0.26-2.97; p=0.09) and 1.71 (95% CI: 0.57-2.84; p=0.007) on average in all three groups, with greater reduction in Gr 3 in comparison with Gr 2.
- HbA1c mean values at the beginning of the study were 8.01±0.79, 7.36±0.87 and 8.01±0.95 in the Gr 1, 2, 3 respectively, and were significantly reduced by 0.94 (95% CI: 0.73-1.15; p<0.01), 0.69 (95% CI: 0.05-1.32; p=0.04) and 1.15(95% CI: 0.35-1.95; p<0.01) on average, with no difference in reduction between groups.
- BNP and body mass index (BMI) were significantly reduced from baseline (30.5±14.6 and 39.3±4.5) by 10.7 (95% CI: 4.73-16.61; p=0.002) and 2.65 (95% CI: 1.35-3.94; p<0.01) on average in Gr 3, whereas reduction in SBP was significant from baseline (137.5±16.9) in Gr 2 by 9.0 (95% CI: -0.05-18.55).
- Postprandial C-peptide, gamma-glutamyl transpeptidase (GGT) and triglycerides were reduced in Gr 3 by -0.32 (95% CI: -0.65-0.01; p=0.058), 8.42(95% CI: -0.15-16.9; p=0.053) and 0.67 (95% CI: -0.09-1.43; p=0.079) on average but these reductions were not significant. Increase in amilase was not observed in studied groups.

CONCLUIONS

- Except HbA1c and BMI reduction liraglutide proved more efficient in hs-CRP and BNP reduction in comparison with DPP-4 inhibitors. Treatment with liraglutide may exert cardioprotective benefits not only due to its glycemic control and body weight reduction but also through its pleiotropic effect.