

A Comparison of Approaches – VLCD vs. LGD using Phentermine and Lorcaserin

Robert M. Huster MD, FACOG
Private Practice – Liberty, MO

Abstract

The medical treatment of obesity continues to be a challenge even with the approval of new medications for long-term therapy. It has become apparent that a combination of medications with different mechanisms may give superior results compared to the use of individual medications alone. A previous review of a series of patients from this practice demonstrated the efficacy of the combination of the medications phentermine and lorcaserin (22 completers, 12 weeks, 28.0 pound weight loss, 11.83%). Here we report the results of 95 patients followed for 12 weeks using a self-selected very low calorie diet (VLCD) without medications versus a low-glycemic diet combined with the medications phentermine and lorcaserin (LGD-P/L). In the VLCD group (27/55) completers had a mean weight loss of 40.2 pound (16.7%). In the LGD-P/L group (25/40) completers had a mean weight loss of 26.9 pounds (11.8%). The results from the intention to treat – last observation carried forward (ITT-LOC) groups are also provided. Biometric measurements and fasting laboratory studies at baseline and at 12 weeks are listed. No increase in heart rate or blood pressure from baseline was seen in the LGD-P/L group. There does, however appear to be a “blunting” in this group of the decreases seen in both heart rate and systolic and diastolic blood pressures noted in the VLCD group. The more robust weight-loss of the VLCD group may account for this but it warrants further investigation.

Introduction

The era of modern medical therapy for the treatment of obesity was ushered in with the 1992 publication of the “Long-term Weight Control: The NHLBI Multimodal Intervention Study” by Michael Weintraub, MD. Using a combination phentermine and fenfluramine during one 34 week segment, a 15.9% (32 pound) weight loss was noted in the treatment group.¹ Lorcaserin was approved by the FDA in June 2012 for the long-term treatment of obesity. In the 3 year (BLOOM) study, the use of Lorcaserin 10 mg bid in conjunction with diet and exercise produced a mean weight loss of 4.4 Kg (9.7 lbs.) over 12 weeks.² Lorcaserin is a selective 5HT_{2C} receptor agonist unlike fenfluramine and dexfenfluramine which had affinity for the cardiac 5HT_{2B} receptor. Stimulation of the cardiac 5HT_{2B} receptor was felt to be responsible for the valvular heart lesions which occurred. As demonstrated by Weintraub with phentermine and fenfluramine, we reasoned that the additive or synergistic weight loss effect of the two medications lorcaserin and phentermine should produce a greater weight loss than the medications used individually. Previously a series of patients from this practice demonstrated the efficacy of this combination (22 completers, 12 weeks, 28.0 pound weight loss, 11.83%)

This study was undertaken to compare the efficacy of this treatment approach versus a traditional very low calorie diet that used no medication to suppress appetite.

Methods

During a 5-month period, 95 patients presenting to a private obesity medicine practice were begun on a 12-week treatment regimen. Participants self-selected either a very low calorie diet (VLCD) using no appetite suppressant medication or a low-glycemic diet using the medications phentermine and lorcaserin (LGD-P/L).

All underwent initial evaluation including a detailed medical history and physical exam. Fasting blood panel included a CBC, CMP, Lipid Profile, HgbA1c, serum insulin, TSH w reflex TT4, and 25-OH Vitamin D level. All had an initial electrocardiogram, body composition by bioelectrical impedance (Model BCS-2, Valhalla Scientific) and completed a sleep apnea questionnaire. Written informed consent was obtained.

The LGD-P/L group followed phase 1 of the South Beach Diet eating plan.³ They were encouraged to eat at least 3 meals per day until satiated. Lorcaserin 10 mg and phentermine HCL 37.5 mg were prescribed to be taken together orally each morning before 10 am. Participants were encouraged to weigh daily and requested to return for follow up visits every two weeks.

The VLCD group ate 5 pre-packaged meal replacements per day totaling approximately 800 Kcal/day (Robard, Healthwise, Protos). Individuals with intact gallbladders were prescribed ursodiol 250 mg bid as gallstone prophylaxis⁴. Participants were encouraged to weigh daily and requested to return weekly for follow up visits.

Both groups were asked to commit to 30 minutes of moderate exercise daily to minimize loss of lean body mass⁵, consume at least 64 ounces of water per day, and take a multivitamin. All return visits included a questionnaire reviewing any possible side effects, a brief physical exam including vital signs, a body composition analysis, and behavior counseling. Adherence to exercise and diet guidelines was assessed. Fasting lab panels were repeated at 12 weeks.

Results

LOW GLYCEMIC DIET + PHENTERMINE & LORCASERIN

COMPLETERS
25/40
63%

	WEIGHT	BMI	BP-S mmHg	BP-D mmHg	HEART RATE BPM	FAT %	MUSCLE %	FBS mg/dl	INSULIN uU/ml	HGBA1c %	CHOL mg/dl	TRIG mg/dl	LDL mg/dl	HDL mg/dl
INITIAL	227.56	37.64	131.98	83.33	83.88	38.41	16.35	92.98	18.46	5.67	182.03	128.03	64.50	61.01
12 WEEKS	200.7	32.71	125.64	81.44	83.84	33.85	17.91	90.85	9.68	5.63	187.21	82.79	115.86	54.64
Δ	-26.86	-4.93	-6.34	-1.89	-0.04	-4.56	1.56	-2.13	-8.78	-0.04	5.18	-45.24	33.36	-6.37
%	-11.8%	-13.1%	-4.8%	-2.3%	0.0%			-2.3%	-47.6%	-0.7%	2.8%	-35.3%	79.6%	-10.4%

ITT-LOC
N-40

	WEIGHT	BMI	BP-S mmHg	BP-D mmHg	HEART RATE BPM	FAT %	MUSCLE %	FBS mg/dl	INSULIN uU/ml	HGBA1c %	CHOL mg/dl	TRIG mg/dl	LDL mg/dl	HDL mg/dl
INITIAL	227.56	37.64	131.98	83.33	83.88	38.41	16.35							
LOC	209.16	34.52	128.6	82.78	85.08	35.62	17.27							
Δ	-18.4	-3.12	-3.38	-0.55	1.2	-2.79	0.92							
%	-8.1%	-8.3%	-2.6%	-0.7%	1.4%									

COMPLETERS
27/55
49%

	WEIGHT	BMI	BP-S mmHg	BP-D mmHg	HEART RATE BPM	FAT %	MUSCLE %	FBS mg/dl	INSULIN uU/ml	HGBA1c %	CHOL mg/dl	TRIG mg/dl	LDL mg/dl	HDL mg/dl
INITIAL	240.68	38.38	133.49	81.55	78.47	38.42	15.92	92.59	14.64	5.65	198.5	168.44	114.21	55.16
12 WEEKS	200.44	31.78	124.81	77.44	67.26	32.8	17.37	87.44	5.14	5.38	184.86	93	115.28	50.72
Δ	-40.24	-6.6	-8.68	-4.11	-11.21	-5.62	1.45	-5.15	-9.5	-0.27	-13.64	-75.44	1.07	-4.44
%	-16.7%	-17.2%	-6.5%	-5.0%	-14.3%			-5.6%	-64.9%	-4.8%	-6.9%	-44.8%	0.9%	-8.0%

ITT-LOC
N-55

	WEIGHT	BMI	BP-S mmHg	BP-D mmHg	HEART RATE BPM	FAT %	MUSCLE %	FBS mg/dl	INSULIN uU/ml	HGBA1c %	CHOL mg/dl	TRIG mg/dl	LDL mg/dl	HDL mg/dl
INITIAL	240.68	38.38	133.49	81.55	78.47	38.42	15.92							
LOC	212.09	33.81	121.07	77.93	71.45	34.64	17.4							
Δ	-28.59	-4.57	-12.42	-3.62	-7.02	-3.78	1.48							
%	-11.9%	-11.9%	-9.3%	-4.4%	-8.9%									

ITT – LOC = All participants enrolled with at least one subsequent follow-up visit

Summary

COMPLETER DATA

	VLCD	LGD-P/L
• Mean weight loss	40.24 lbs	26.86 lbs
• Body Fat %	-14.6%	-11.9%
• Muscle Mass %	+9.1%	+9.5%
• Heart Rate	-11.2 bpm	0
• BP-S	-8.7 mmHg	-6.3 mmHg
• BP-D	-4.1 mmHg	-1.9 mmHg
• FBS	-5.2 mg/dl	-2.1 mg/dl
• Fasting Insulin	-9.5 uU/ml	-8.8 uU/ml
• HgbA1c	-0.27%	-0.04%
• Triglycerides	-75.4 mg/dl	-45.2 mg/dl

Discussion

The superior short-term weight loss seen with a VLCD compared to a low calorie diet is confirmed in this series of patients. Historically, there is a disagreement whether long-term results favor one approach over the other.⁶ The results of the LGD-P/L group are consistent with a previous series of 22 patients from this practice (mean weight loss of 28 pounds -11.8%). It has been reported by Hendricks, et al,⁷ that no significant changes in heart rate or blood pressure occur with the use of phentermine. No increase in heart rate or blood pressure from baseline was seen in this series using the combination of phentermine and lorcaserin. There does, however appear to be a “blunting” of the decreases seen in both heart rate and systolic and diastolic blood pressures noted in the VLCD group. The more robust weight-loss of the VLCD group may account for this but it warrants further investigation.

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