EFFICACY OF ORLISTAT PLUS DIET COMPARED TO DIET ALONE IN REDUCING BODY WEIGHT AND BODY MASS INDEX

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ABSTRACT

Obesity and overweight play an important role in the increasing incidence of metabolic syndrome. The incidence and prevalence continue to rise in Indonesia. Management of obesity and overweight comprises diet, life style, pharmacotherapy, and surgery. Excess of calorie intake is the most significant component, so diet therapy has the important role. Orlistat is a potent and selective inhibitor of gastrointestinal lipases thereby prevents the digestion and absorption up to 30% of ingested dietary fat. The study enrolled overweight and obese subjects without risk factor for cardiovascular diseases for 12 weeks follow up. The objective of this study was to investigate the efficacy of orlistat 120 mg tid plus diet compared with diet alone in reducing body weight and body mass index among subjects with BMI ≥ 25 kg/m^2, male 21-45 years, female 21-55 years without cardiovascular risk factors (DM, BP> 140/90, HDL < 40 mg/dl, CHD, smoker) will be randomized to receive diet alone (control group) or orlistat plus diet (treatment group) for 12 weeks. It was found that during 12 weeks period, treatment group lost body weight (mean) 3.750 ± 1.997 kg and body mass index (mean) 1.535 ± 0.857 kg/m^2. Control group lost body weight (mean) 1.795 ± 2.212 kg and body mass index mean 0.526 ± 1.127 kg/ m^2. There was significant difference in body weight (p= 0.006) and BMI (p=0.04) between two groups. Diet compliance of control group and treatment group was poor. Side effects of orlistat were fatty/oily stool, flatus with discharge and oily evacuation but they are tolerable. In conclusion, orlistat is effective in reducing body weight and body mass index as conjunction with diet therapy in overweight and obese management.

Keywords : *orlistat, body weight, body mass index*

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INTRODUCTION

Overweight and obesity is frequently related to some diseases which is called as comorbid diseases such as: hyperinsulinemia, beta cell dysfunction, dyslipidemia, hypertension, coronary heart disease, stroke, gall bladder related diseases, osteoarthritis, sleep apnea, hyperuricemia, malignancy (Guerciolini 1997; Kolotkin 2001; Tjokroprawiro 2001). There is changing in eating habit in Indonesian city society, they tend to follow western society eating habit, which is 40% of calorie is taken from fat (Tjokroprawiro 2001). The prevalence of patients with overweight and obesity in Indonesia is increasing. Approximately 12,8% of Indonesian male and 30% of Indonesian female suffer from overweight, 35% of Indonesian male and 5,9% of Indonesian female suffer from obesity (Tjokroprawiro 2001). Weight loss can improve diseases related with obesity. The aim of weight loss is to achieve the ideal weight that is decreasing the risk of suffering diseases related to obesity. The risk is decreasing if the weight loss is 5% - 10% from previous body weight (Perry 1997; Prochaska 1992; Rossner 1997).

Management of weight loss and obesity includes motivation, diet, medication and surgery. Excess of Calorie intake is the most important component in causing overweight and obesity, so, the diet management is the most important component in managing weight loss and obesity. It is difficult to maintain patient compliance in diet therapy, it cause increasing of the usage of medication in managing weight loss and obesity. Orlistat is one of the medication that is frequently used as supportive drug in diet therapy with dosage 120 mg three times daily orally, taken with main meal, can decrease fat absorption ± 30% so that body weight can decrease faster, followed by normalization of co morbid diseases. Patient compliance on diet therapy will increase because of the side effect this drug if the patients consume food containing high fat. (Tjokroprawiro 2001).

The patients on orlistat research consist of individuals with one or more risk factor of cardiovascular diseases. The researches show the decrease of weight loss within 3 months, followed by improvement of co morbid

diseases (James, 2001; Samuel 2001; Walker 2000). The samples of this research are individuals without cardiovascular diseases such as Diabetes Mellitus, coronary heart disease, hypertension, smoking, HDL cholesterol < 40 mg/dl) with period of observation 12 weeks.

MATERIALS AND METHODS

This study is a randomized, open label study. Placebo is not used because Orlistat can cause oily stool, so that the samples will be able to differ between placebo and Orlistat. This research has control group and treatment group. Control group is individual with diet therapy alone and treatment group is individual with diet therapy and given Orlistat 3x120 mg. Every subject has the same probability to become control group or treatment group because of randomization. Subjects with BMI ≥ 25 kg/m^2 , male 21-45 years, female 21-55 years without cardiovascular risk factors (DM, BP> 140/90, HDL < 40 mg/dl, CHD, smoker) will be randomized to receive diet alone (control group) or orlistat plus diet (treatment group) for 12 weeks.

RESULTS

Table 1. Sample characteristics

	Control (n=20)	Treatment (n=20)
Sex		
- female	2	1
- male	18	19
Smoker	-	-
Coronary heart disease	-	-
Age ± SD (years)	44.1 ± 7.2	40.5 ±6.9
Weight ± SD (kg)	75 ± 13.3	71.2 ± 10.0
BMI, mean ± SD, kg/m2	30.6 ± 4.0	28.8 ± 1.2
Range, kg/m2	25.6 ± 36.5	25.6 ± 41.2
Blood pressure		
- systole ± SD	120 ± 8.2	120 ± 6.3
- diastole ± SD	70 ± 7.1	68.6 ± 4.3
HDL Cholesterol, ± SD	49.3 ± 8,1	56 ± 2.8
Fasting glucose, ± SD	87.2 ± 7.7	89.6 ± 8.4
Post Prandial gucose, ± SD	116.0 ± 29.6	108.8 ± 20.3

During 12 weeks period, treatment group lost body weight (mean) 3.750 ± 1.997 kg and body mass index (mean) 1.535 ± 0.857 kg/m^2. Control group lost body weight (mean) 1.795 ± 2.212 kg and body mass index mean 0.526 ± 1.127 kg/ m^2. There was significant difference in body weight (p = 0.006) and BMI (p =0.04) between two groups. Diet compliance of control group and treatment group was poor. Side effects of orlistat were fatty/oily stool, flatus with discharge and oily evacuation but they are tolerable.

DISCUSSION

Obesity and overweight is defined by parameter of body mass index (BMI), overweight if the BMI 25-29,9 kg/m^2 obesity if the BMI 30 kg/m$^{2.}$ The samples of this research are individuals with BMI 30.6 (± 4.0) kg/m^2 with range 25.6 -41.2 kg/m^2 which show that all the samples suffer from overweight and obesity. Other researchers use samples with higher BMI because they want to use only individuals with obesity without the overweight ones. Davidson used samples with mean BMI 36.5 (± 0.9) on the control group and mean BMI 36.2 (± 0.1) on treatment group. Rossner used samples with mean BMI 35.3 (± 4.1) on control group and mean BMI 35.2 (± 3.9) on treatment group. The same research was also conducted by Hill, the samples' mean BMI 32.8 (± 0.2) on control group and 32.6 (± 0.2) on treatment group (Davidson 1999; Hill 1999; Rossner 2000).

Five main risk factors cardiovascular diseases as reported by National Cholesterol Educational Program (NCEP) on adult treatment program (ATP)-III, are : smoking, blood pressure ≥ 140/90 mmHg, HDL cholesterol < 40 mg/dl, history of CHD, female ≥ 55 years and male ≥ 45 years and DM has the same risk factors with those who have history of CHD (Tjokroprawiro 2001). The samples with such risk factors are excluded in this research, while the samples of researches which are conducted by Garrow, Goldstein, Rossner, and Van Goal at least have one or more risk factors (Garrow 1991; Goldstein 1991; Rossner 1992; Van Goal 1998).

The management of obesity according to Tjokroprawiro includes behavior therapy, dietary therapy, life style, drug, and surgery (Tjokroprawiro 2001). Dietary therapy is the most important component in managing overweight and obesity, because the excess of calorie intake is the main cause of overweight and obesity. National Institute of health recommends decreasing of calorie intake 500 mg/ day for people with overweight and obesity class I (BMI 25-34.9). With this kind of diet the weight loss is approximately 0.45 kg every week (Samuel 2001). This research applied hypocalorie low fat diet (Diet with decreasing calorie intake 500 kcal/day which 30% of energy is taken from fat). The weight loss of control group which took 12 weeks diet was not as expected, which is 1.795 (± 2.212) kg, due to very low compliance as many as 70% , moderate compliance 15%, and good compliance 15%. The treatment group was given Xenical^R 3x 120 mg and dietary therapy for 12 weeks, then, their mean weight loss was 3.750 (± 1.997) kg. The compliance on dietary therapy on treatment group was also poor, which 65% samples with very low compliance, 25% moderate compliance, and good compliance 12 %. There is a

significant difference of weight loss between 2 groups, the weight loss of control group was 5% and the treatment group was 9% (Hill 1999).

One of the aims of management of overweight and obesity is weight loss as many as 5 % in as a short time target and decrease BMI (Tjokroprawiro 2001). The weight loss more than 5 % from previous weight was found on 5 samples (36%) from control group and 12 samples (60%) on treatment group. The decrease of BMI happened to both groups, as many as 0.526 (± 1.127) on control group and 1.535 (± 0.857) on treatment group. There is a significant difference in decreasing BMI on both groups. Other research showed decreasing body weight > 5 % as many as 40% on control group and 60% on treatment group (Rosssner 2000). The side effects of Xenical^{R} are oily stool, oily evacuation, fecal urgency, and flatus with discharge, oily spotting and uncontrolled evacuation (Guricci 1998). In this research, samples who used Xenical^{R} reported side effects such as oily stool, flatus with discharge, and oily evacuation. Other researches showed tolerability on Xenical^{R} related to the amount of fat within the food which side effects are liquid stool and oily stool (Hill 2000; Van Gall 1998).

CONCLUSION

Orlistat is effective in reducing body weight and body mass index as conjunction with diet therapy in subjects with overweight and obesity who have no cardiovascular risks in Outpatient Department in Dr Soetomo General Hospital.

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