Over the past decade a rapidly growing number of persons with primary obesity due to availability of different foods and the automation of life [1]. Regular consumption of high-calorie and, in particular, food rich fast (simple) carbohydrates and a sedentary lifestyle, lead to an increase in the blood level of postprandial glycemia, development of insulin resistance and, as a consequence, the development of diabetes mellitus (DM) type 2 [2].

In the process of phylogenesis the human body was formed in the conditions of consumption number of meals equivalent consumed energy [3-5]. It is known that the consumption of food, not only compensates energy expenses, but also improves the psychological state of the person through the production of biologically active substances that have a morphine effect (mild euphoria and quite often with a food addiction) [6-8].

A factor that is fundamental in the development of primary obesity is alimentary. It is proved that the obesity is manifested in childhood and pubertal periods of life, is a predictor of the formation in adulthood metabolic syndrome, early atherosclerosis, insulin resistance, DM type 2 and its associated vascular complications, and an increased risk of developing cancer [9-15].

Objective: to study carbohydrate metabolism in young women with primary obesity.

Methods: the study involved 241 women of young age (16 – 45 years) (mean age of 28.5 ± 7 years) with primary obesity (body mass index of 26 to 62 kg/m^2). All patients were divided into groups depending on the age of onset of increase of body weight: I group – individuals with obesity manifested in childhood and puberty (n = 164), mean age (26 ± 7,5) years and II group, persons whose obesity developed in the post-pubertal period (n = 77), mean age (31 ± 8) years.

The degree of obesity was determined by body mass index (BMI) according to who criteria [16], the type of obesity was assessed according to the generally accepted index of the ratio of waist size to hip size (ON/ABOUT) [17, 18]. Gynoid or Android type of obesity was determined according to the criteria of NCEP - ATP III (National Cholesterol Education Program – Adult Treatment Panel III), given that the normal ratio for women is no more than 0.85 [19].

Assessment of glucose homeostasis was performed according to the recommendations of the American diabetes Association 2012 [20]. The blood glucose level on an empty stomach (Glu 0) (mmol/l) and in the standard oral test glucose tolerance (OTG), which was carried out in 30 (Glu30), 60 (Glu 60), 90 (Glu 90) and 120 (Glu 120) standard min after load of 75 g glucose was determined in plasma of capillary blood glucose oxydase method using analyzer “Biosen C-line” (EKF, Germany).

Evaluation of the results OTTG was conducted in accordance with WHO recommendations.

Determination of glycosylated hemoglobin HbAc1 in blood (%) was determined by a photocolorimetric method using a commercial kit of reagents JSC “Reagent” on the photoelectric photometer KFK-3.

To calculate the content of insulin in the blood (mkIU/ml) using commercial kits of reagents company ("Eliza" DRG diagnostics, USA).

Statistical data processing was carried out using a standard statistical software package "Microsoft Office", "Statistica 6.0" with determination of the main statistical indicators of the number of (M, m, σ). Intergroup differences were assessed by parametric criterion of “t” student test, criterion χ^2 , significance level $p < 0.05$.

Results: the Study blood glucose has allowed to establish that in the whole group the basal levels of glycemia varied widely (2.6 – 11.81 mmol/l), but mean values were within normal values: (4.35 ± 1.0) mmol/l and (4.59 ± of 1.04) mmol/l ($p>0.01$) and (I and II groups, respectively). This indicator revealed no significant differences in the groups studied.

However, during the standard OTTG among patients of groups I and II were statistically significant differences, which manifest themselves 30 minutes from the start of the test. It is revealed that glycemia in the 30th minute in group I amounted 6.70 ± 1.6 mmol/l, while in group II – 7.29 ± 1.95 mmol/l (p=0.01). At 60 minutes the following results were obtained 6.39 ± 1.91 mmol/l and 7.47 ± 2.40 mmol/l (in groups I and II, respectively) (p<0.001). Significant differences were obtained after 2 hours from the start of OTTG: 4.43 ± 1.33 mmol/l in the first group of 5.17 ± 1.78 mmol/l in group II (p=0.000). In 27.38% of the patients were recorded "flat" hyperinsulinemic curve that indicates the voltage of the adaptive capacity of the pancreas, which is exacerbated by the development of insulin resistance.

When comparing carbohydrate metabolism depending on the types of obesity in the groups studied, it was revealed that women with gynoid type of obesity of the I and II groups were significantly significant differences were not detected, which may be due to constitutional peculiarities. However, when comparing groups of women with Android type obesity groups I and II were found significantly important differences, since the basal glycemia and subsequent 30-minute intervals.

Conclusions: Despite the predominance of the alimentary factor in the development of primary obesity in women of young age in 64% of the identified clinical and laboratory signs of insulin resistance, of which 19.5% - impaired glucose tolerance, and 6.6% of the overt type 2 diabetes. The frequency of impaired glucose metabolism in this cohort of patients was dependent on age of onset of disease.