



Justification Effectiveness of Systemic Treatment of Breast Cancer Depending on Body Mass Index



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Background

The incidence of breast cancer in the world in general and in Ukraine in particular is growing. In 2015, in Ukraine the incidence reached 70.0 per 100 thousand female populations. According to the Ministry of Health in Ukraine 26% of the female population for 2015 was overweight or obese. Obesity-a chronic metabolic character, which is the result of the interaction of the endogenous factors, environmental conditions and life style. Endogenous factors could be considered a violation of the genetic and hormonal balance. The external conditions include irregular rhythm nutrition, use of substandard products. By disorders include sedentary lifestyle, lifestyles.

Obesity is the first risk factor for metabolic syndrome, diabetes type II, cardiovascular disease and some forms of cancer, including breast cancer. Since overweight is a risk factor for breast cancer, there is reason to believe that among patients with breast cancer the percentage of obese women is higher than in the population. The risk of breast cancer in postmenopausal women by 30% more than in premenopausal, women with obesity-50%. Furthermore it was proven that obesity is associated with poor prognosis in patients with breast cancer, regardless of menopausal status.

The leading role in achieving long-term results of treatment with systemic methods, such as chemotherapy or hormone therapy. The purpose of systemic therapy is the eradication of micro metastases in the case of radical surgical treatment or reduction of tumor load in case of treatment of locally advanced or metastatic cancer. The calculation of the dose of chemotherapy conducted mainly in the area of the body. Thus to avoid complications associated with overdose of chemotherapy, the standard practice is to calculate the dose of 2.0m² patients whose body area more than this. Preparations hormonal action

used in standard dosage for an adult without constitutional features. Along with this recent literature there is information that women are overweight effectiveness of systemic treatments may be lower than expected. Other data refute this information.

In view of the above, the study on the impact of body mass index on the effectiveness of systemic treatment for breast cancer is an actual scientific problem and promising area of research. The aim of this retrospective study the effect of body mass index on the efficiency of treatment of breast cancer, improve treatment outcomes for breast cancer by individualization of treatment measures taking into account the characteristics of the metabolism of the patient.

Material and Methods

The study included 754 patients with breast cancer between the ages of 30 and 77 (57, 6±1) years of age who were treated according to our clinic, department of oncology and medical radiology. Dniepropetrovsk medical academy at Municipal Institution "Dniepropetrovsk City Multi-field Clinical Hospital #4", Dnepropetrovsk state medical academy from 2005-2016. All patients were evaluated according to the following data: stage of the disease, age and BMI at the time of diagnosis, the size, histological type and metastases. IHC type, MRI methods, bioelectrical impedance analysis, Ultrasounds analysis.

Tumor size was evaluated after measuring its maximal diameter and distributed in accordance with the International TNM-classification (7th edition, 2009). The histological type and degree of differentiation of the tumor was evaluated respectively by the National Standards of diagnostics and treatment of malignant neoplasm's, reflecting the recommendations of leading international organizations. BMI is calculated by the formula: $I=m \times h^2$, where m-body weight (kg); h-height (m).

According to these calculations the patients were divided in accordance with the WHO criteria into the following groups: those with a BMI <25kg/m²-normal or underweight; from 25 to 29.9kg/m²-overweight; >30kg/m²-obese. The material for the histopathological study was obtained during surgery. We examined the relative risk of relapse and death with regard to the BMI categories adjusting for eight factors known to be predictors of disease-free survival (DFS) and overall survival (OS): menopausal status, nodal status tumor size, vessel invasion, estrogen receptor (ER) status, progesterone receptor status, tumor grade and treatment regimens ECOG.

By analyzing archival material to consider the particular response to systemic treatment of breast cancer women with deficiency of body weight, normal, high and overweight. Explore options for determining the individual characteristics of lipid metabolism of patients with breast cancer and their possible use for predicting the effectiveness of treatment. To determine the lipid metabolism will be applied anthropological research methods, bioimpedansnoho measurement, CT.

Result

In this retrospective study, among 754 patients with breast cancer, 45% were identified with excess body weight, and 31% of various obesity degree. Patients with a BMI <25kg/m² were significantly more diagnosed with stage 2 breast cancer triple negative. BMI >30kg/m², 10% more often associated with metastatic RLN, which is an indirect sign of higher metastatic potentials. Patients with normal BMI had significantly longer overall survival (OS) and disease-free survival (DFS) than patients with intermediate or obese BMI in pair wise comparisons adjusted for other factors. We found a strong

correlation between obesity and lymph node involvement. These observations suggest that obesity may potentiate the metastatic spread of breast tumors. Distant metastases were also found more often in obese patients in bone or visceral sites in patients <45 years of age at diagnosis. Patients with normal mass by IHC with triple negative cancer 45% and 20% with BRCA+ and patients with obesity 55% that's with IHC luminal A.B but 2 group receive L-carnitine in group with L-carnitine by ECOG better and calendar Chemotherapy was as planned and less Adverse Advents than group Patients without support L-Carnitine And less hematological complication.

Conclusion

In conclusion, this retrospective investigation our patient demonstrates that BMI is an independent prognostic factor for OS in patients with breast cancer. We have supporting evidence that obese BMI represents a poor risk feature for outcome, especially in pre-/premenopausal patients, most of whom received chemotherapy without hormonal therapy. A lifestyle intervention reducing dietary fat intake, with modest influence on body weight, may improve relapse-free survival of breast cancer patients receiving conventional cancer management. Longer, ongoing nonintervention follow-up will address original protocol design plans, which requires 3 years of follow-ups after completion of recruitment. The prominent role of L-carnitine in the present study belongs to the level of Her-2/neu, Ki67, which were significantly reduced after L-carnitine supplementation. Thus, L-CAR as add on therapy to TAM, in addition to its ability to foster the immune system and improve the patients' fatigue and quality of life, may offer better cancer prognosis, which may be, in part, a prospective trial to overcome Chemotherapy and letrozole resistance.



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