CHEMICAL AND BIOLOGICAL SCIENCES

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OBESITY AND CANCER OF THE ABDOMINAL ORGANS: PREVALENCE AND ASSOCIATION

Abstract. This report focuses on the challenges arising from the combination of abdominal cancer and obesity. In particular, the combination of malignant tumors of the abdominal organs with obesity creates a distinct clinical phenotype; the high prevalence of obesity among patients with malignant tumors of the abdominal organs may influence the clinical course of the disease and the effectiveness of treatment. It has been shown that malignant tumors of the abdominal organs consistently account for about one-third of all oncological pathologies, which indicates their significant role in the structure of morbidity and places a substantial burden on the healthcare system. At the same time, it has been established that overweight patients are characterized by a significantly higher level of comorbidity (100% vs. 22.38%) ($p<0.05$), which manifests as a prevalence of cardiovascular, endocrine, and gastroenterological pathologies and creates an additional clinical burden.
Keywords: obesity, abdominal organs, comorbidity, oncology, surgical treatment

Malignant neoplasms (MN) of the abdominal organs and the digestive system are among the most common cancers and remain a significant medical and social problem [1]. At the same time, the combination of cancer and obesity is of particular clinical importance, as it is accompanied by the development of a complex set of interrelated pathophysiological changes. Comorbidity can significantly alter the course of the disease process, give rise to additional pathogenetic mechanisms, and influence the selection and outcomes of diagnostic and therapeutic measures [2, 3]. At the same time, obesity is one of the most common comorbid conditions in patients with cancer [4].

The combination of malignant tumors of the abdominal organs with obesity creates a distinct clinical phenotype in which the interaction of the tumor process, metabolic disorders, comorbid conditions, and changes in tissue homeostasis can significantly complicate the treatment process. This is particularly important in surgical treatment, as obesity can affect the technical feasibility of the surgical procedure, the choice of surgical approach, the extent of tissue trauma, the risk of bleeding, infectious and other postoperative complications, as well as the course of the recovery period [5]. Although a number of scientific studies have been devoted to the treatment of patients with cancer who are obese, the results obtained remain fragmented and are not always integrated into a unified clinical concept [6], and individual aspects of this problem are

primarily addressed within related specialties—gastroenterology, endocrinology, anesthesiology, general surgery, and other fields—which underscores the need for a comprehensive surgical-oncological approach to addressing it [7].

It is noteworthy that malignant tumors of the abdominal organs and obesity share common etiological and pathogenetic factors. The high prevalence of obesity among patients with malignant tumors of the abdominal organs may influence the clinical course of the disease and the effectiveness of treatment [8].

This study utilized data from the official statistical reports of the Chernivtsi Oblast Oncology Service and materials from clinical observations at the Bukovynian Clinical Oncology Center.

In the first stage of the study, a retrospective analysis was conducted of the incidence rates of malignant neoplasms of the abdominal organs in the population for the period 2015–2019. The trends, structure, staging, and mortality rates were assessed, which allowed for the development of a general characterization of the oncological epidemiological process.

The second phase involved conducting a cohort observational study from 2022 to 2024. The study included 952 patients with malignant neoplasms of the abdominal organs of various locations. The mean age of the patients was 62.35 ± 11.57 years; men predominated (58.93% versus 41.07% women).

Since an important area of contemporary research is the study of regional characteristics of the cancer epidemiological process—which allows for the consideration of the influence of demographic, socioeconomic, and organizational factors [9] - and since regional differences in the structure of morbidity, detection rates, and treatment outcomes can significantly affect survival rates [10, 11], an analysis of the trends in the incidence of malignant neoplasms of the abdominal organs was conducted at the population level based on the results of a retrospective epidemiological study covering the period 2015–2019.

According to a retrospective analysis, it was found that malignant neoplasms of the abdominal organs consistently account for about one-third of all oncological diseases, which indicates their significant role in the morbidity profile and places a substantial burden on the healthcare system. It was found that malignant neoplasms of the abdominal organs are characterized by a predominance of late-stage diagnoses (Stages III–IV), which account for more than 70% at the population level and 57.98% in the clinical cohort, indicating the systemic nature of the problem of late diagnosis.

It has been demonstrated that the stage of the tumor process is the leading prognostic factor, whereas excess body weight does not influence the stage at diagnosis but determines the characteristics of the subsequent clinical course of the disease. At the same time, it was found that patients with excess body weight are characterized by a significantly higher level of comorbidity (100% versus 22.38%) ($p<0.05$), which

manifests as a predominance of cardiovascular, endocrine, and gastroenterological pathologies and creates an additional clinical burden. It has also been demonstrated that obesity is an independent prognostic factor for the development of postoperative complications, as confirmed by high odds ratios (OR up to 4.83) and high sensitivity (0.88) in the evaluation of the prognostic model.

In the course of this study, an integrated semiquantitative prognostic model (IPR = S + M + C + R) was developed for the first time, which allows for the assessment of overall clinical risk based on a combination of tumor stage, metabolic status, level of comorbidity, and risk of postoperative complications. This made it possible to propose a stratification of patients according to clinical risk level (low, intermediate, high), which lays the foundation for the implementation of risk-oriented approaches to diagnosis, treatment, and postoperative management of patients.

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