

# Medico-social aspects of hepatocellular carcinoma

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## Abstract

Oncological diseases are one of the leading health problems both in the world and in Kazakhstan, second only to cardiovascular diseases. Hepatocellular carcinoma occupies the 8th place in the structure of oncopathologies, has an unfavorable prognosis and an unfavorable course. According to the WHO, more than 1.3 million people die each year from hepatocellular carcinoma (HCC). The incidence rate of HCC in Kazakhstan is up to 5.5 cases per 100 thousand of the population, and the mortality rate remains high (about 1000 people annually). In 2017, 82.3% of HCC patients died before the end of the year. Five-year survival in HCC does not exceed 18%, and postoperative recurrence is about 50%.

**Key words:** social, hepatocellular carcinoma, incidence, healthcare

## Introduction

The study of epidemiology of hepatocellular carcinoma in Kazakhstan is a relevant task, which will allow to predict the volume of innovative treatment.

The modern approach in treatment of hepatocellular carcinoma is interventional oncoradiology - it is a radical method of radiofrequency ablation of the liver, however its use is possible at early stages of primary liver cancer.

Detection of early stages of hepatocarcinoma is possible by liver ultrasound, but an important component at this stage is the qualification of the doctor.

The use of radiofrequency ablation of the liver will improve the quality of life of patients with hepatocellular carcinoma, as this method extends their life expectancy.

**Objective:** To identify the epidemiology of hepatocellular carcinoma and innovative methods of its treatment in the world.

## Material and methods

Research methodology: desk method. PICO method. P - patients with primary liver cancer, I - intervention, use of modern methods of treatment, C - comparison with other methods of treatment of patients with hepatocellular carcinoma, O - comparison of patients' quality of life at late stages of hepatocellular carcinoma diagnosis.

Modern methods of treatment of primary liver cancer is radiofrequency ablation of the liver, which is possible

only in the early stages of detection. Cancer diseases take second place in the structure of the population's total mortality after circulatory system diseases. Hepatocellular carcinoma (HCC) is a representative of primary liver cancer [1,2]. In recent years, in Kazakhstan, there has been an increase in the incidence of hepatocellular carcinoma (HCC) which was 3.3% in 2018, while mortality, in the same period was 4.5% [3]. The five-year survival rate is 23.7% [4].

HCC is characterized by an aggressive course and, in most cases, by an unfavorable prognosis. According to the world data, the five-year survival rate in HCC does not exceed 18%, and postoperative relapse - 50% [5-7]. In Kazakhstan, analysis of epidemiology of primary liver cancer will allow to develop measures aimed at the improvement of prevention, diagnostics and treatment of HCC [8].

According to the World Health Organization, more than one million people die of HCC annually. According to the International Agency "Cancer Incidence in the Five Continents" [9], the highest standardized incidence rates of liver cancer in men are in Korea, ranging from 44.9 to 50.0 per 1,000 population. Indicators above 300 are registered in Thailand, Japan, and China. Minimal rates are established in Algeria, India, Belgium, and the Netherlands. At the same time, in women - the rates are much lower [10].

According to the World Health Organization, 9.6 million people died of cancer worldwide in 2018. About 70% of cancer deaths occur in low- and middle-income countries. In 2018, neoplasms ranked fourth among the causes of death in Kazakhstan (8.8%). Early detection of cancer at I-II stages is 60.5% [11].

Currently, worldwide, primary liver cancer poses a serious public health problem. The relevance of the problem is due to unsatisfactory results of treatment of patients, namely late diagnostics, oncological care and life expectancy [12].

Current realities of HCC are problems that are related to late diagnosis in 75% of cases, patients metastasize, which complicates and limits the choice of treatment. As a result, in some cases, chemotherapy remains the treatment of choice for patients with primary liver cancer. At the same time, the results of late treatment remain insufficiently satisfactory, and the effectiveness rate of various chemotherapy regimens is low, ranging from 12.0 to 36.0% [13].

HCC is the fifth most common disease in men and the ninth most common disease in women. HCC is mostly advanced, highly aggressive, and has a low survival rate and life expectancy. In the structure of cancer mortality, primary liver cancer occupies the second place and makes 9.6 % of all cancer deaths [14-15].

Currently, liver cancer is a complex section of abdominal oncology, which attracts more and more attention of surgeons, oncologists and radiologists. HCC is the most common epithelial malignancy of the liver and its incidence is 8.5 per 10,000 population. The age profile is presented on the life period of the working-age population - from 40 to 50 years old. Predisposing factors are liver cirrhosis in 80-90% of cases induced by viral hepatitis B and C [16].

More than 564,000 new cases of liver cancer are reported worldwide each year, including 398,000 in men and 166,000 in women. Liver cancer in men tends to be detected at 2-4 times higher rates than in women [17].

The annual incidence of liver cancer in high-risk countries may occur at a young age of up to 20 years, whereas in low-risk regions liver cancer occurs rarely before the age of 50 years. The incidence of liver cancer is increasing in several developed countries, including the United States, and the increase is likely to continue for several decades. The trend is the result of a cohort effect associated with hepatitis B and C virus infection, which peaked in the 1950s and 1980s [18].

The incidence of liver cancer has decreased in some regions of several developing countries, possibly as a result of the use of hepatitis B virus vaccination and improved food quality. The geographic variability in the incidence of liver cancer is largely due to the distribution of hepatitis B and C viruses and aflatoxins.

Over the past ten years worldwide, including Kazakhstan, the incidence of malignant neoplasms tends to increase and occupy one of the leading positions among the main causes of death. Morbidity is more widespread in the female population in the age group "60 years and older". According to averaged data, every year the number of malignant neoplasms increased by 578 cases and the average annual growth rate was 1.84%. In turn, the morbidity rate of malignant neoplasms in Kazakhstan was also unstable. From 2005 to 2014, the incidence rate increased slightly, from 192.5 per 10,000 population to 198.8. The average annual growth rate of morbidity increases by 0.36% [19].

In 2011, the National Screening Program for early detection of malignant neoplasms was introduced in Kazakhstan. Analysis of the situation of the State Program of Health Development "Densaulyk" for 2016-2019 for the period of implementation of the program "Salamatty Kazakhstan" noted the low effectiveness

of the National screening program (detection rate is 3.4% among adults, 16.4% - among children). A possible reason is low monitoring of screening efficacy [20]. According to the program of development of oncological care in Kazakhstan for 2012-2016, the main goal is to increase the life expectancy and quality of life of Kazakhstanis by reducing mortality from cancer. The incidence of malignant neoplasms in 2013 for HCC was 285.0, which is higher than in 2012 (282.9) by 0.7%. The increase in morbidity is due to the aging of the population, the development of preventive screening medical examinations and increased detectability [21].

According to a rough estimate, more than 500,000 new cases of liver cancer are registered annually in the world, and 85% of them occur in countries with a high degree of hepatitis B infection (South-East Asia, Central Africa). Among European and U.S. populations, the incidence rate is 2-7 per 100,000 people. In Russia, the incidence of liver cancer is 4.9 in men and 2.2 in women, but it also varies greatly depending on the region. The incidence of liver cancer in South Kazakhstan region is 6.7 per 100,000 people and ranks 6th among malignant diseases (about 140 patients are detected per year). With I-II stages 16,1 % of patients are revealed, with III - 47,1 %, with IV - 36,8% of patients. Up to 90% of patients are men. The one-year mortality rate is 57-60%, which is determined by the absence of a wide introduction of liver surgery in our region. With the introduction of endovascular interventions into the everyday practice of the South Kazakhstan regional oncologic dispensary the possibility of regional chemotherapy for liver cancer has appeared [22].

The structure of medical care for cancer patients with HCC is at the stage of development. Only some clinics have experience in interventional radiological interventions for locally disseminated processes and conduct drug therapy. Rapid and significant reduction in mortality is possible if multidisciplinary approach to diagnosis and treatment of HCC is widely implemented based on active intra- and interclinical collaboration of different specialists: surgeons, transplantologists, interventional radiologists, chemotherapists, hepatologists, diagnosticians at all stages of tumor process development [23].

Multidisciplinary approach, including new methods of treatment, one of which is interventional oncology, is necessary to improve the effectiveness of the treatment of oncologic patients. Interventional oncoradiology has proven highly effective in the treatment of many malignant neoplasms, including liver cancer in addition to surgery, chemotherapy and radiation therapy. In addition to interventional oncology, immunoncology, which allows tumor control at the molecular level, is widely implemented in oncology [24-27]. The advantages of interventional oncoradiology are the effect directly on the tumor, excluding systemic effects of chemo medication, accompanied by fewer side effects, as well as good tolerability of the procedure [28-30]. When assessing the effectiveness of the procedure, the main endpoints are evaluated: overall survival, time without disease progression, and time to progression [31,32].

Overall survival is a key criterion for assessing treatment efficacy [33]. Thus, according to the overall survival rate it is possible to evaluate the advantage of techniques for the treatment of cancer patients [32].

In Kazakhstan, 36,272 new cases of malignant neoplasms were detected in 2019, along with nonmelanoma skin cancer (2018 - 35,758), including 426 primary multiple MNs (377) or 1.2% and 663 postmortem cases (752) or 1.8%. The number of cases detected increased by 514 or 1.4%. Liver cancer in 2018 in the structure of causes of death from malignant neoplasms in the population of both sexes shifted from 10th to 9th place

with a specific weight of 4.6% (2018 - 4.1%), the mortality rate was 3.40. In East Kazakhstan and West Kazakhstan regions (6.9 each), Pavlodar region (4.3), Zhambyl region (3.5) and Shymkent city (3.5) liver cancer mortality is higher than the national average. Aktobe (2.3), Kyzylorda (2.4) and Almaty (2.5) regions have the lowest rates [34].

Liver cancer in 2018 in the structure of causes of death from malignant neoplasms of both sexes moved from 9th to 10th place, with a share of 4.1/4.0 (2017), the mortality rate per 10,000 population was 3.2/3.3. In East Kazakhstan - 4.9, Karaganda - 4.8, West Kazakhstan - 4.1, Pavlodar - 4.1, Mangistau - 3.7, Zhambyl - 3.6, Turkestan - 3.6 regions, and in Astana city - 3.7 liver cancer mortality is above the national average [35].

According to the indicators of the national oncological service for 2020 there is a decrease in mortality from cancerous diseases of various localizations. The mortality rate for 2020 was 75.5 per 100 thousand people. The specific weight in the mortality structure was 0.7%.

In the structure of mortality lung cancer was in the first place (16.4%), stomach cancer in the second place (11.5%), colorectal cancer in the third place (10.7%) and breast cancer (7.8%) [36].

In execution of the order of the Head of the state, voiced in the Address to the people of Kazakhstan "New opportunities for development in the conditions of the fourth industrial revolution", a draft Comprehensive Plan to combat cancer in Kazakhstan

for 2018-2022 was developed. The aim of the Comprehensive Plan is to reduce the burden of malignant neoplasms. The Comprehensive Plan provides for the establishment of the National Scientific Oncological Center in Astana, which will play a coordinating role in cancer care. The main objectives of the Center will be 1) to provide cancer care in accordance with international standards; 2) to conduct research in the field of oncology; 3) to develop and implement personalized methods of prevention, early diagnosis and treatment [37].

## Conclusion

The results of the literature review showed that worldwide, there is an increase in cancer pathology and primary liver cancer (hepatocellular carcinoma) has a rapidly progressing course.

For screening of primary liver cancer in the world, the effectiveness of liver ultrasound has been proven, but under an important condition - the qualification of a doctor.

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