

DIGESTIVE CANCER PREVENTION IN ELDERLY

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Abstract

For the past decades, there has been an increasing emphasis on prophylaxis, particularly in the field of oncology. The emergence of preventive strategies has led to enhanced life expectancy, resulting in a larger elderly population that often faces additional comorbidities, complicating medical management. According to Globocan 2022, digestive cancers rank among the highest in terms of global incidence and mortality. Consequently, the prevention of digestive cancer is a pressing concern, especially for the elderly population. This article aims to present the main types of digestive cancer and their incidence in older adults, along with several prevention strategies.

Keywords: Digestive, Elderly, Geriatrics, Oncology, Prevention

Rezumat

În ultimele decenii, s-a pus tot mai mult accent pe profilaxie, în special în domeniul oncologic. Apariția strategiilor de prevenție a dus la creșterea speranței de viață și implicit la o creștere a numărului populației vârstnice, ce se confruntă adesea cu comorbidități suplimentare, complicând gestionarea acestora din punct de vedere medical. Conform Globocan 2022, cancerul digestiv se află printre cele mai frecvente în ceea ce privește incidența și mortalitatea globală. În consecință, prevenirea cancerului digestiv reprezintă o preocupare intensă, în special pentru populația vârstnică. Acest articol își propune să prezinte principalele tipuri de cancer digestiv și incidența acestora la vârstnici, împreună cu mai multe strategii de prevenție.

Cuvinte cheie: Digestiv, Vârstnici, Geriatrie, Oncologie, Prevenție



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Introduction

Globocan 2022 data indicate a significant rise in the incidence and mortality of colorectal cancer worldwide. It ranks third in incidence and second in mortality. Following colorectal cancer, gastric and liver cancers rank fourth and fifth, respectively. In terms of mortality, liver cancer occupies the third position, gastric cancer is fifth, and pancreatic cancer is sixth. This highlights the prevalence of digestive malignancies. (see Table 1).

Geographically, esophageal cancer is most prevalent in Asia and southern Africa, gastric cancer in Asia and South-West America, colorectal cancer in North America, Australia, northern Asia, and Europe, liver cancer in Central Asia and some regions of northern Africa, while pancreatic cancer is most common in northern Asia, North America, and Europe⁽¹⁾.

Advanced age is an independent risk factor for the development of cancers in older adults, and mortality rates increase with age. The aging process involves morphological and physiological changes that lead to genomic instability, epigenetic alterations, diminished immune protection, chronic inflammation, dysbiosis and along with patient's comorbidities, pose challenges for healthcare specialists. For these reasons, a healthy lifestyle is universally recommended, including a balanced diet based on natural

ingredients, avoidance of processed foods with intrinsic toxic effects to prevent possible intestinal dysbiosis, maintenance of optimal body weight, regular moderate to intense physical activity, prevention of vitamin deficiencies, avoidance of smoking or exposure to pollutants/toxins and limitation of alcohol consumption. Another critical factor in maintaining health is psychosocial integrity, which is often overlooked. A good mental and socioeconomic status influences health span, lifespan, and the likelihood of cancer morbidity and mortality⁽²⁾.

Risk Factors

The risk factors mentioned above are general vectors for malignant pathology. Depending on what type of malignancy we are talking about, there are several specific risk factors for each type of cancer.

Regarding the esophagus, dysplasia can occur at any age, but advanced age is an independent risk factor for the development of high-grade dysplasia and adenocarcinoma⁽³⁾. Barrett's esophagus, which is defined as replacement of normal distal esophageal squamous epithelium by metaplastic columnar epithelium, has a higher prevalence in the elderly and is one of the most significant risk factors for esophageal cancer⁽⁴⁾. Gastroesophageal reflux disease (GERD) is considered the primary risk factor for esophageal metaplasia, but there are other

Cancer type	Colorectum	Stomach	Liver	Pancreas	Total cancer cases
Incidence	1 926 425 (9,6%)	968 784 (4,8%)	866 136 (4,3%)	510 992 (2,5%)	19 976 499
Mortality	904 019 (9,3%)	660 175 (6,8%)	758 725 (7,8%)	467 409 (4,8%)	9 743 832

Table 1. Incidence and mortality of digestive cancers in 2022 (Globocan 2022)

Diet and nutrition	● based on fruits and vegetables ● reduced consumption of red meat ● avoiding processed products, fats (trans and saturated) and refined sugars ● maintaining an optimal level of vitamins and nutrients
Body weight	● regular moderate to intense physical activity ● at least 150 min./week (30 min. 5 days a week)
Exposure to toxic	● smoking cessation ● limit alcohol intake ● avoid exposure to pollutants
Psychosocial health	● tap into social connections and community
Screening	● regular checkup and screening tests

Table 2. Healthy lifestyle measures



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negative impacts on the esophagus including smoking, alcohol consumption, the presence of hiatal hernias and central obesity⁽⁵⁾. Due to atypical or absent symptoms in the elderly, they often present to healthcare providers later, when other complications have already arisen. For these patients, clinicians must weigh the benefits of repeated endoscopic surveillance against the patient's comorbidities, life expectancy, and annual risk of developing adenocarcinoma⁽⁴⁾.

With advancing age, certain changes can occur in the homeostasis of the stomach which may predispose the elderly to the development of various gastric disorders. These changes include a decrease in gastric blood flow, reduced mucosal protective mechanisms and alterations in the gastric microbiota. This makes older people more susceptible to developing gastric ulcers or atrophic gastritis⁽⁴⁾.

Atrophic gastritis, together with intestinal metaplasia, are two precancerous lesions, which can lead to the development of gastric cancer. The main etiologic agent for these diseases remains *Helicobacter Pylori* (HP), which is involved by producing chronic gastritis⁽⁶⁾.

Thus, one of the most significant risk factors for gastric cancer development is infection with HP, being classified as a group I carcinogen⁽⁴⁾. The topic of HP eradication in gastric cancer prevention is a controversial

one and needs more studies to finalize a conclusion, but at the same time there are data showing an incidence of gastric cancer about 5 times higher in people with HP-positive atrophic gastritis than in those with HP-negative and an incidence almost 15 times higher than in those without atrophic gastritis and without HP infection. Regarding intestinal metaplasia, the incidence of gastric cancer is even higher, up to 6.4 to 10.9 in those with positive HP and metaplasia than those without metaplasia⁽⁶⁾.

The prevalence of this infection is higher among the elderly in developed countries, while younger populations in developing countries are more affected. This difference may be related to exposure to poor sanitation, which is a risk factor for contracting the infection. There has also been observed an association between extraintestinal diseases and *H. pylori* infection, including osteoporosis, cardiovascular diseases, and neurocognitive disorders, although more studies are needed to confirm these links⁽⁴⁾.

Regarding colorectal cancer development, several risk factors are involved, including inflammatory bowel disease (IBD), which has a prevalence of 10-30% in individuals over 60 years old. Immunosenescence associated with aging alters the intestinal microbiota, thus increasing the risk of developing IBD. Diagnosing IBD in older adults is challenging due to atypical manifestations, the presence

of comorbidities, and polypharmacy that can affect intestinal function. Compared to younger patients, elderly individuals are more likely to present with isolated colonic inflammation and perianal fistulas. In Crohn's disease (CD), rectal bleeding is more common at onset than symptoms such as abdominal pain, diarrhea or weight loss. Thus, the inflammatory phenotype is more frequently observed in older adults at disease onset. Otherwise, some studies suggest that the onset of IBD in elderly patients may be less aggressive, characterized by lower inflammation levels, fewer disease signs, and slower progression.

Therapeutic management for these patients can be complicated by multiple comorbidities and associated polypharmacy. Mesalamine is typically used as a first-line therapy for mild to moderate ulcerative colitis (UC). However, adherence to treatment is low (40-60%) due to large tablet size, dosing frequency, and adverse effects such as nausea, vomiting and abdominal pain. Therefore, a combination of oral and topical treatments may prove more effective. Corticosteroids are highly effective, particularly in moderate/severe cases for inducing remission, but they are not as effective for maintaining it due to their numerous side effects. Immunomodulators are not widely utilized among the elderly, despite having similar efficacy to younger patients, and the potential for adverse effects remains the same. However, conflicting data exists regarding the use of immunotherapy in older adults, necessitating further studies to clarify its administration in this age group⁽⁴⁾.

The American Cancer Society and other entities support a list of risk factors for the development of liver cancer. That list includes: older age, sex (much more common in men), race (United States, Asian Americans and Pacific Islanders have the highest rate of development of liver

cancer), inherited conditions such as hemochromatosis, chronic viral hepatitis B and C, cirrhosis and hepatic steatosis associated with metabolic dysfunction (MASLD), obesity (increased liver cancer incidence by 87% in obese individuals⁽⁷⁾), DZ type II, primary biliary cirrhosis and last but not least alcohol and tobacco use or exposure to other toxic substances (aflatoxin, organochlorines, pesticides)^{(8),(9)}.

It follows that risk factors for developing liver cancer are mainly related to environmental, biological, lifestyle and various behaviors⁽⁹⁾.

Prevention Strategies

General strategies for the prevention of cancer include smoking cessation, avoiding excessive alcohol consumption, maintaining a balanced diet, rich in fruits and vegetables and regular physical activity to sustain optimal body weight⁽²⁾. Some studies suggest a protective role for long-term aspirin use in the development of digestive cancers. This mechanism may be explained by a chemoprotective effect of acetylsalicylic acid, yet more research is needed to validate these findings⁽¹⁰⁾. The decision to initiate aspirin prophylaxis must weigh the risks and benefits of long-term treatment and should consider an appropriate population for the administration of this therapy⁽¹¹⁾.

Specific measures are recommended for each type of digestive cancer. For esophageal cancer prevention, in addition to general preventive measures, it is advised to treat GERD and conduct endoscopic surveillance of Barrett's esophagus, which is the only precursor for esophageal adenocarcinoma. Endoscopic surveillance can detect dysplasia of varying grades and early stages of adenocarcinoma⁽⁵⁾.

For gastric cancer prevention, one of the most crucial measures is testing and eradicating H.



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pylori infection and detecting intestinal metaplasia through endoscopic biopsy. According to guidelines, only patients with intestinal metaplasia of high-risk phenotype (such as incomplete subtype, OLGIM stages III/IV), refractory *H. pylori* infection, and those with a first-degree relative with a history of gastric cancer should undergo regular endoscopic surveillance, typically every three years⁽¹²⁾. Some studies indicate that screening endoscopy can reduce mortality by up to 40%(13).

Following a *H. pylori* infection, a reduction in microbiome diversity may occur leading to intestinal dysbiosis, which itself is a risk factor for colorectal cancer⁽¹⁴⁾. Primary prevention of colorectal cancer consists of avoiding exposure to previously mentioned risk factors. These measures include limiting alcohol intake, red meat and processed food and quitting smoking. This should be combined with increasing protective factors, such as maintaining an optimal weight through regular physical activity, adhering to a healthy diet that avoids fats and refined sugars, maintaining optimal levels of vitamin D and calcium and possibly using aspirin. Regular screening through colonoscopy is another preventive measure that can detect abnormal cells before they become cancerous, thus facilitating secondary prevention by identifying and removing precancerous lesions⁽¹⁵⁾.

Issaka et al. propose a good practice guide that includes the primary measures that should be undertaken by gastroenterologists, internists, and other health specialists⁽¹⁶⁾.

Hepatocellular cancer prevention can be done through primary prevention related to changing behaviors and lifestyle, as well as vaccination decision. This includes general measures of smoking cessation, controlling alcohol consumption and dietary management to prevent progression to hepatic steatosis, as well as screening and treating infections with hepatitis B and C viruses. Genetic risk factors are present in all malignant pathologies and in this context, conditions such as hemochromatosis, Wilson's disease and alpha-1 antitrypsin deficiency should be monitored. Recommended surveillance methods include alpha-fetoprotein levels and ultrasound examinations^(9,17). Secondary prevention is to stop the progression of chronic liver disease. This can be done through regular screening and a better understanding and collaboration between health care providers and patients⁽⁹⁾. Among the most common risk factors for pancreatic cancer are smoking, high-calorie diets rich in fats leading to obesity and diabetes. These factors contribute to a state of inflammation closely linked to the development of adenocarcinoma. Given the challenging diagnosis and low survival rates associated with this type of cancer, the best method for reducing incidence relies on

adhering to the pillars of a healthy lifestyle, encompassing diet, physical activity, sleep, stress management, avoidance of toxins, and fulfilling social engagement⁽¹⁸⁾. (see Table 2).

Conclusions

The rising incidence and mortality of digestive cancers among the elderly population underscore the urgent need for targeted prevention strategies. Understanding the unique risk factors and challenges associated with diagnosing and managing these cancers in older adults is essential for healthcare providers. By promoting a healthy lifestyle, encouraging regular screening, and implementing specific preventive measures tailored to each type of digestive cancer, it is possible to improve outcomes and enhance the quality of life for this vulnerable demographic. Continued research is crucial to refine these strategies and ensure that all older adults have access to effective prevention and treatment options for digestive cancers.

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