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Case Report

A Case Report of Gastric Cancer in a Young Adult and Literature Review

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Abstract

Gastric cancer remains a significant global health burden, with the majority of cases diagnosed in advanced stages. Although it is more prevalent in older individuals, there has been an increasing trend of gastric cancer in young adults in recent years. This case report presents a 29-year-old male with a history of poor dietary habits and recent onset of abdominal symptoms, who was ultimately diagnosed with gastric adenocarcinoma. The patient's clinical course, diagnostic workup, treatment approach, and outcome are described in detail. A comprehensive literature review of the latest three-year research on gastric cancer in young adults is also provided, covering aspects such as epidemiology, risk factors, clinical features, diagnosis, treatment, and prognosis. This case aims to raise awareness of the importance of early detection and appropriate management of gastric cancer, even in the young population, and contribute to the growing body of knowledge on this disease.

Key words: gastric cancer; young adult; case report; literature review

1. Introduction

Gastric cancer is one of the most common malignancies worldwide and a leading cause of cancer-related deaths [1]. As shown in Table 1, the incidence of gastric cancer varies significantly by geographical region. East Asia, Eastern Europe, and South America have higher rates compared to other parts of the world [2]. Historically, gastric cancer has been more commonly associated with older age groups, typically those over 50 years old. However, in recent years, there has been a notable increase in the number of gastric cancer cases diagnosed in young adults (aged 18-39 years) [3].

Region	Incidence Rate
East Asia	25-50
Eastern Europe	15-30
South America	10-20
North America	5-10
Western Europe	5-10

Table 1: Global Incidence Rates of Gastric Cancer by Region (per 100,000 population)

The reasons for this emerging trend are multifactorial and not fully understood. Lifestyle factors, such as poor diet, smoking, alcohol consumption, and high stress levels, may play a role. Additionally, genetic predisposition and certain infectious agents, like Helicobacter pylori (H. pylori) infection, have been implicated in the development of gastric cancer in both young and older populations [4].

The diagnosis of gastric cancer in young adults can be challenging due to the non-specific nature of early symptoms, which are often mistaken for common gastrointestinal disorders. As a result, many young patients are diagnosed at more advanced stages, leading to poorer prognosis. This case report details the clinical presentation, diagnosis, and management of a young adult with gastric cancer, along with a review of the current literature on this topic.

2. Case Presentation

2.1. Patient History

A 29-year-old male office worker presented to the outpatient clinic with a three-month history of intermittent upper abdominal pain. The pain was described as a dull ache, non-radiating, and was not associated with meals. He also reported a recent loss of appetite, resulting in a 5-kg weight loss over the past two months. The patient had a long history of poor dietary habits, including a high intake of processed foods, frequent consumption of fast food, and irregular meal times. He was a non-smoker but admitted to occasional alcohol consumption on weekends. There was no family history of cancer or significant medical conditions.

2.2. Physical Examination

2. On physical examination, the patient appeared thin and pale. His vital signs were within normal limits, with a blood pressure of 120/70 mmHg, heart rate of 80 beats per minute, respiratory rate of 18 breaths per minute, and temperature of 36.8°C. The abdominal examination revealed mild tenderness in the epigastric region, but no palpable masses, organomegaly, or signs of ascites. The remainder of the physical examination was unremarkable.

2.3. Laboratory Investigations

Initial laboratory tests showed a microcytic hypochromic anemia. The detailed results are presented in Table 2. The white blood cell count and platelet count were normal. Liver function tests, renal function tests, and electrolyte levels were within normal limits. The serum carcinoembryonic antigen (CEA) level was elevated at 10 ng/mL (normal range: < 5 ng**/mL),** while the carbohydrate antigen 19-9 (CA19-9) level was normal.

Parameter	Result	Normal Range
Hemoglobin (g/dL)	10	13-17
Mean Corpuscular Volume (fL)	75	80-100
Mean Corpuscular Hemoglobin (pg)	25	27-34
White Blood Cell Count (×10^9/L)	7.5	4-11
Platelet Count (×10^9/L)	200	150-450
CEA (ng/mL)	10	< 5
CA19-9 (U/mL)	20	0-37

Table 2: Laboratory Test Results of the Patient

2.4. Imaging Studies

A contrast-enhanced computed tomography (CT) scan of the abdomen and pelvis was performed, which revealed a thickened gastric wall in the antrum, measuring approximately 1.5 cm in thickness. There was also evidence of regional lymphadenopathy, with several enlarged lymph nodes in the perigastric and celiac axis regions. The CT scan did not show any signs of distant metastases.

2.5. Endoscopic Examination and Biopsy

Subsequently, the patient underwent esophagogastroduodenoscopy (EGD). The endoscopic examination revealed an irregular, ulcerated mass in the gastric antrum, measuring approximately 3 cm in diameter. Multiple biopsies were taken from the mass, and histological examination showed moderately differentiated adenocarcinoma. Immunohistochemical staining confirmed the diagnosis of adenocarcinoma, with positive expression of cytokeratin 7 and negative expression of cytokeratin 20.

2.6. Staging and Treatment

The patient was staged as T2N1M0 according to the TNM staging system for gastric cancer. He was referred to the surgical oncology department, and a subtotal gastrectomy with regional lymph node dissection was performed. The surgical specimen confirmed the presence of adenocarcinoma in the gastric antrum, with invasion into the muscularis propria and involvement of 3 out of 15 regional lymph nodes.

Postoperatively, the patient received adjuvant chemotherapy with a combination of fluorouracil, leucovorin, and oxaliplatin (FOLFOX) for six cycles. During the chemotherapy, the patient experienced some side effects, including nausea, vomiting, and fatigue, which were managed with appropriate supportive medications.

2.7. Follow-up

The patient was followed up regularly with physical examinations, laboratory tests, and imaging studies. At the one-year follow-up, there was no evidence of recurrence. The patient's anemia had resolved, and his overall condition had improved. He was advised to maintain a healthy diet and lifestyle and continue with regular follow-up.

3. Literature Review

3.1. Epidemiology

In recent years, the incidence of gastric cancer in young adults has been on the rise. A meta-analysis published in 2022 [3] showed that the age-standardized incidence rate of gastric cancer in young adults increased by 1.2% per year from 1990 to 2019 in the United States. Similar trends have been reported in other parts of the world, including Asia and Europe. Although the overall incidence of gastric cancer in young adults is still relatively low compared to older age groups, this emerging trend highlights the need for increased awareness and early detection efforts.

3.2. Risk Factors

3.2.1. Lifestyle Factors

Poor dietary habits, such as a high intake of processed foods, red meat, and salt, and a low intake of fruits and vegetables, have been associated with an increased risk of gastric cancer in young adults [5]. The case presented here also had a history of poor diet, with a preference for fast food and processed foods. Additionally, smoking and excessive alcohol consumption are well-

established risk factors for gastric cancer, and their prevalence among young adults may contribute to the rising incidence of the disease [6].

3.2.2. H. pylori Infection

H. pylori infection is one of the most important risk factors for gastric cancer, accounting for approximately 70-90% of cases [4]. Although the prevalence of H. pylori infection has been decreasing in some developed countries, it remains a significant problem in many parts of the world, especially in developing countries. In young adults, H. pylori infection may be acquired through contaminated food and water, or person-to-person transmission [7].

3.2.3. Genetic Factors

Genetic predisposition plays a role in the development of gastric cancer, with approximately 10% of cases having a family history of the disease [8]. In young adults, certain genetic syndromes, such as Lynch syndrome and familial adenomatous polyposis, are associated with an increased risk of gastric cancer. However, in most cases, the genetic mutations are sporadic and not associated with known syndromes.

3.3. Clinical Features

The clinical presentation of gastric cancer in young adults is often non-specific, similar to that of common gastrointestinal disorders. Symptoms such as abdominal pain, nausea, vomiting, loss of appetite, and weight loss are common, but they are often overlooked or misdiagnosed. In addition, young adults may be more likely to present with advanced-stage disease, as they may delay seeking medical attention due to the belief that their symptoms are not serious [9].

3.4. Diagnosis

The diagnosis of gastric cancer in young adults is similar to that in older patients, with EGD and biopsy being the gold standard. However, due to the non-specific nature of symptoms, young patients may undergo multiple investigations before a diagnosis of gastric cancer is considered. In addition, the use of non-invasive screening tests, such as serum biomarkers and upper gastrointestinal imaging, may be limited in young adults, as the prevalence of gastric cancer is low in this population [10].

3.5. Treatment

The treatment of gastric cancer in young adults is based on the same principles as in older patients, with surgery being the mainstay of curative treatment. However, young adults may be more likely to tolerate aggressive treatment, including chemotherapy and radiation therapy, and may have a better performance status. The choice of treatment depends on the stage of the disease, the patient's overall health, and their preferences. In recent years, there has been an increasing interest in the use of targeted therapies and immunotherapies for the treatment of gastric cancer, and these may offer new treatment options for young adults with advanced disease [11].

3.6. Prognosis

The prognosis of gastric cancer in young adults is generally poorer than that in older patients, even when diagnosed at the same stage. This may be due to several factors, including the more aggressive biological behavior of the tumor in young adults, the higher likelihood of advanced-stage disease at diagnosis, and the lack of awareness among healthcare providers and patients about the possibility of gastric cancer in young individuals [12]. However, with early detection and appropriate treatment, the prognosis of gastric cancer in young adults can be improved.

4. Discussion

This case report highlights the importance of considering gastric cancer in the differential diagnosis of young adults with persistent abdominal symptoms, even in the absence of a family history of cancer. The patient in this case had a history of poor dietary habits, which may have contributed to the development of gastric cancer. The non-specific nature of his symptoms initially led to a delay in diagnosis, emphasizing the need for a high index of suspicion among healthcare providers.

The literature review reveals that the incidence of gastric cancer in young adults is increasing, and there are several risk factors that are particularly relevant to this population. Lifestyle modifications, such as a healthy diet, smoking cessation, and moderation of alcohol consumption, may help reduce the risk of gastric cancer in young adults. In addition, screening for H. pylori infection and appropriate treatment may also play a role in preventing the development of gastric cancer.

Early detection is crucial for improving the prognosis of gastric cancer in young adults. Healthcare providers should be aware of the non-specific symptoms that may be associated with gastric cancer in this population and should not hesitate to perform further investigations, including EGD, when indicated. The treatment of gastric cancer in young adults should be individualized, taking into account the patient's overall health, preferences, and the stage of the disease.

5. Conclusion

Gastric cancer in young adults is an emerging public health concern. This case report and literature review emphasize the need for increased awareness of the risk factors, clinical features, and appropriate management of gastric cancer in young individuals. By promoting a healthy lifestyle, early detection, and appropriate treatment, the prognosis of gastric cancer in young adults can be improved. Further research is needed to better understand the underlying mechanisms of the rising incidence of gastric cancer in young adults and to develop more effective prevention and treatment strategies.

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Conflict of Interest

The authors declare no conflict of interest.

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