Revista Información Científica

ISSN 1028-9933
Universidad de Ciencias Médicas de Guantánamo

March 2025 Volume 104 e4925
DOI: https://doi.org/10.5281/zenodo.14704428

ORIGINAL ARTICLE

Clinical-surgical characterization of gastric cancer in Guantanamo province

Caracterización clínico-quirúrgica del cáncer gástrico en provincia Guantánamo

Caracterização clínico-cirúrgica do câncer gástricona província de Guantánamo

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Received: 22-05-2024 **Accepted:** 22-02-2025 **Published:** 13-03-2025

ABSTRACT

Introduction: in Cuba, in 2022, gastric cancer was the tenth cause of death from neoplasia. This unknown entity has not been characterized in the province of Guantánamo. **Objective:** to describe the demographic, clinical, histopathological and surgical characteristics of gastric cancer in the General Surgery Service of the General Teaching Hospital "Dr. Agostinho Neto", Guantánamo, Cuba, during the period 2018–2022. **Method:** a descriptive, longitudinal, prospective study was conducted with all discharged patients (n = 46). Variables related to the patient (age, sex, risk factors), the cancer (location, histopathological type; stage, metastasis, status at discharge), and the surgical procedure (surgical treatment, postoperative complications) were studied. **Results:** 73.9% of patients were men, 58.7% were aged 60–79 years, and 60.9% had risk factors. Cancer was located in the gastric corpus and was a moderately differentiated intestinal adenocarcinoma in 50.0% of cases. Metastasis occurred in 63.0% of cases, and 50.0% were in stage IV. Palliative surgical treatment was applied in 76.1% of cases, and the most frequently used surgical technique was alimentary jejunostomy (52.2%). Pulmonary thromboembolism was the most common complication. **Conclusions:** gastric cancer was more common in men, older adults, and smokers. The highest incidence is caused by abdominal pain syndrome located in the corpus of the stomach; with the most common histological type being stage IV moderately differentiated intestinal adenocarcinoma. The most commonly used surgical technique was alimentary jejunostomy and pulmonary thromboembolism was the most common complication.

Keywords: gastric cancer; stomach neoplasia; gastric surgery; gastropathies

ISSN 1028-9933
Universidad de Ciencias Médicas de Guantánamo

RESUMEN

Introducción: en Cuba, en el 2022, el cáncer gástrico fue la décima causa de muerte por neoplasia. Dicha entidad, que se conozca, no se ha caracterizado en la provincia de Guantánamo. **Objetivo**: describir las características demográficas, clínicas, histopatológicas y quirúrgicas del cáncer gástrico en el servicio de Cirugía General del Hospital General Docente "Dr. Agostinho Neto", Guantánamo, Cuba, en el periodo 2018 – 2022. **Método**: se realizó un estudio descriptivo, longitudinal, prospectivo, con todos los pacientes egresados (n=46). Se estudiaron variables relacionadas con: el paciente (edad, sexo, factores de riesgo), con el cáncer (localización, tipo histopatológico; estadio, metástasis, estado al egreso) y con el proceder quirúrgico (tratamiento quirúrgico, complicaciones posoperatorias). **Resultados**: el 73,9 % de los pacientes fueron hombres, el 58,7 % tenía entre 60 y 79 años de edad, el 60,9 % tuvo factores de riesgo. En el 50,0 % el cáncer se localizó en el cuerpo gástrico y fue un adenocarcinoma intestinal moderadamente diferenciado. El 63,0 % presentó metástasis y el 50,0 % estaba en estadio IV. Al 76,1 % se le aplicó tratamiento quirúrgico paliativo y la técnica quirúrgica más aplicada fue la yeyunostomía alimentaria (52,2 %). El tromboembolismo pulmonar fue la complicación más común. **Conclusiones**: el cáncer gástrico fue más frecuente en hombres, adultos mayores y fumadores. La mayor incidencia es ocasionada por síndrome doloroso abdominal, localizado en el cuerpo estomacal, siendo el más común el tipo histológico adenocarcinoma intestinal moderadamente diferenciado, en estadio IV. La técnica quirúrgica más aplicada fue la yeyunostomía alimentaria y el tromboembolismo pulmonar fue la complicación más común.

Palabras clave: cáncer gástrico; neoplasia de estómago; cirugía gástrica; gastropatías

RESUMO

Introdução: em Cuba, em 2022, o câncer gástrico foi a décima causa de morte por neoplasia. Esta entidade, tanto quanto se sabe, não foi caracterizada na província de Guantánamo. **Objetivo:** descrever as características demográficas, clínicas, histopatológicas e cirúrgicas do câncer gástrico no serviço de Cirurgia Geral do Hospital General Docente "Dr. Agostinho Neto", Guantánamo, Cuba, no período 2018 – 2022. **Método:** foi realizado estudo descritivo, longitudinal e prospectivo com todos os pacientes que receberam alta (n = 46). Foram estudadas variáveis relacionadas: ao paciente (idade, sexo, fatores de risco), ao câncer (localização, tipo histopatológico; estadiamento, metástase, estado na alta) e ao procedimento cirúrgico (tratamento cirúrgico, complicações pós-operatórias). **Resultados:** 73,9% dos pacientes eram homens, 58,7% tinham entre 60 e 79 anos, 60,9% apresentavam fatores de risco. Em 50,0% o câncer estava localizado no corpo gástrico e era um adenocarcinoma intestinal moderadamente diferenciado. 63,0% apresentavam metástase e 50,0% estavam em estágio IV. O tratamento cirúrgico paliativo foi aplicado em 76,1% e a técnica cirúrgica mais aplicada foi a jejunostomia alimentar (52,2%). O tromboembolismo pulmonar foi a complicação mais comum.**Conclusões:** o câncer gástrico foi mais frequente em homens, idosos e fumantes. A maior incidência é causada pela síndrome dolorosa abdominal, localizada no corpo do estômago, sendo o mais comum o tipo histológico, adenocarcinoma intestinal moderadamente diferenciado, em estágio IV. A técnica cirúrgica mais aplicada foi a jejunostomia alimentar e o tromboembolismo pulmonar foi a complicação mais comum.

Palavras-chave: câncer gástrico; neoplasia estomacal; cirurgia gástrica; gastropatias

How to cite this article:
Roldós Ramírez CA, Herrera Puente A, Elias Sierra R. Clinical-surgical characterization of gastric cancer in Guantanamo province. Rev Inf Cient [Internet]. 2025 [cited Access date]; 104:e4925. Available at: http://www.revinfcientifica.sld.cu/index.php/ric/article/view/4925

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INTRODUCTION

Gastric cancer derives from an uncontrolled growth of epithelial cells with malignant potential, located at the level of the stomach walls, below the cardioesophageal junction.[1] In the world it is the sixth most common cancer and the second cause of death by neoplasia; it is estimated that by 2030 the number of new cases will increase by 70 %.[1]

In Cuba, in 2022, gastric cancer was the tenth cause of death by neoplasm, with a rate of 7.4 per 100 000 inhabitants.[2]

The social relevance of the study of gastric cancer is revealed by the numerous publications on the subject.[3,4,5] However, no study on the clinical-surgical profile of this type of cancer has been socialized in the Guantanamo context, which makes it necessary to clarify the demographic, clinical, histopathological and therapeutic peculiarities of gastric cancer in the territorial context.

The objective of this article is to determine the demographic, clinical, histopathological and surgical characteristics of gastric cancer in the General Surgery Service of the General Teaching Hospital "Dr. Agostinho Neto" during 2018 - 2022.

The contribution of the research is that it offers a theoretical reference that characterizes demographic, clinical, histopathological and surgical aspects of gastric cancer from the perspective of the general surgeon, in the aforementioned General Surgery service during the five-year period 2018 - 2022, information that enriches the territorial medical culture.

METHOD

A descriptive, retrospective and longitudinal study was performed. The universe consisted of all patients discharged from the aforementioned General Surgery Service (n=46) with a histopathological diagnosis of gastric cancer. Figure 1 shows the diagram of participants.

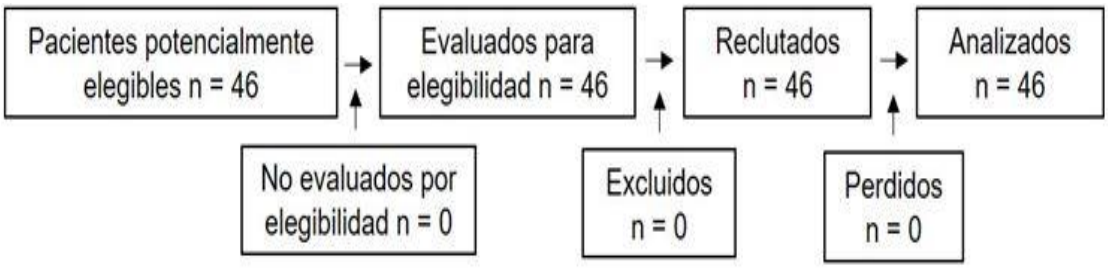

Fig 1: Diagram of participants

The variables studied were age, sex, and history of gastric cancer risk factors, form of presentation, location, histopathological type, stage, and presence of metastasis, type of surgical treatment, surgical technique performed and postoperative complications.

The methods used were analysis-synthesis, induction-deduction, documentary and mathematical-statistical study (frequency analysis was used for qualitative variables (nominal or ordinal), absolute and cumulative frequencies (n), and percentage calculation (%).

The bibliographic search for the study was carried out in the LILACS, MEDLINE, BIREME-OPS, TRIPDATABASE and COCHRANE databases. The search delimiters were: stomach, gastric cancer and the corresponding terms in English and Portuguese. The information was processed with SPSS (Statistical Package for the Social Science) version 21.0. The results were presented in tables.

The ethics committee of the participating institution approved the study. The ethical principles of the Declaration of Helsinki were respected. Informed consent was not requested from the patients because there was no interaction with them, since the source of information was the clinical history.

RESULTS

Table 1 shows that 58.7 % of the patients were between 60 and 79 years of age and 73.9 % were male. The 60.9 % presented some risk factor for gastric cancer and the most common was smoking (43.5 %).

Table 1: Characterization of patients with gastric cancer according to age, sex and history of risk factors

Characteristic		No.	%
Age	40 - 59 years	16	34,8
	60 - 79 years	27	58,7
	80 - 89 years	3	6,5
Sex	Male	34	73,9
	Female	12	26,1
Risk factors for gastric cancer*(Identified in 28 patients; 60.9 %)	Smoking	20	43,5
	Gastric peptic ulcer	17	37,0
	Coffee	8	17,4
	Others	4	8,7

(*): A patient could have more than one risk facto

It was more frequent that the cancer presented itself through an abdominal pain syndrome (41.3 %), was located in the gastric body (50.0 %). The most common histological type was moderately differentiated intestinal adenocarcinoma (50.0 %). In addition, 63.0 % of the patients had metastases, mainly in the liver (21.7 %). 50.0 % were diagnosed at stage IV (50.0 %) and received palliative treatment (76.1 %). (Table 2)

Table 2: Characterization of gastric cancer according to the form of presentation

Gastric cancer	Syndromography	No.	%
Syndromography	Abdominal pain syndrome	19	41,3
	Tumor syndrome	12	26,1
	Pyloric syndrome	12	26,1
	Peritoneal perforative syndrome	2	4,3
	Upper gastrointestinal bleeding syndrome	1	2,2
Anatomical localization	Gastric body	23	50,0
	Antrum - gastric pylorus	6	13,0
	Gastric fundus	4	8,7
	Gastric antrum	4	8,7
	Gastric pylorus	4	8,7
	Gastric body - antrum - pylorus - gastric pylorus	2	4,3
	Gastric cardia	1	2,2
	Gastric fundus - cardia - gastric body	1	2,2
	Body - gastric antrum	1	2,2
Histological types	Moderately differentiated intestinal adenocarcinoma	23	50,0
	Poorly differentiated intestinal adenocarcinoma	13	28,3
	Other types of cancer	5	10,9
	Well-differentiated intestinal adenocarcinoma	2	4,3
	Early cancer	2	4,3
	Diffuse undifferentiated adenocarcinoma	1	2,2
Metastases (with metastases n=29; 63.0 %) Location	Liver	10	21,7
	Peritoneum	7	15,2
	Nodes	6	13,0
	Colon	6	13,0
	Small intestine	4	8,7
	Pancreas	4	8,7
	Great vessels	3	6,5
Tumor stage	Stage IA	2	4,3
	Stage IB	3	6,5
	Stage IIA	4	8,7
	Stage IIB	2	4,3
	Stage IIIA	3	6,5
	Stage IIIB	1	2,2
	Stage IIIC	8	17,4
	Stage IV	23	50,0
Type of treatment	Curative	11	23,9
	Palliative	35	76,1

*Other types of cancer: Hogking's lymphoma, adenocarcinoma of the plastic lymphoid type, low grade leiomyosarcoma

Table 3 illustrates that the most commonly applied surgical technique was dietary jejunostomy (52.2 %), which was mainly performed on cancer in the gastric corpus (30.4 %).

Table 3: Characterization of patients according to the surgical technique performed for gastric cancer

Surgical technique performed	Total		Localization of the tumor	Total	
	No.	%		No.	%
Jejunostomy for enteral nutrition	24	52,2	Body	14	30,4
			Bottom	4	8,7
			Body-anthro-pylorus	2	4,3
			Cardia	1	2,2
			Fund-cardiac-body	1	2,2
			Body-antro	1	2,2
			Antro-pylorus	1	2,2
Subtotal gastrectomy, omentectomy, D1 lymphadenectomy, GJ-Polya Billroth II	10	21,7	Body	7	15,2
			Pylorus	2	4,3
			Antro	1	2,2
Long loop antecolic GJ derivative procedure with jejunojejunostomy	6	13,0	Body	2	4,3
			Pylorus	1	2,2
			Antro-pylorus	3	6,5
Hemigastrectomy omentectomy, D1 lymphadenectomy, GJ-Polya Billroth II	3	6,5	Antro	1	2,2
			Pylorus	1	2,2
			Antro-pylorus	1	2,2
Exploratory laparotomy, biopsy, suture and epiploplasty	2	4,3	Body	2	4,3
Exploratory laparotomy, gastrotomy, ligation by transfixation of bleeding ulcer, biopsy, gastrorrhaphy, toilet and drainage	1	2,2	Antro-pylorus	1	2,2

Legend: GJ: gastrojejunostomy
Source: medical records

In 100 % of cancers located in the fundus, cardia, fundus-cardia-body, body-antrum and gastric body-antrum-pylorus, and in 60.9 % of tumors in the gastric body, the surgical technique most frequently applied was alimentary jejunostomy (Table 4).

In cancer of the gastric antrum, the long-loop antecolic gastrojejunostomy with jejunojejunostomy (50.0 %) was the most commonly performed derivative procedure.

Subtotal gastrectomy, omentectomy, D1 lymphadenectomy, Polya and Billroth II gastrojejunostomy were performed more in tumors at the level of the gastric pylorus (50.0 %).

Table 4: Characterization of the patients according to tumor location and surgical technique used

Tumor localization	Total*		Surgical technique performed	Total++	
	No.	%		No.	%
Gastric fundus	4	8,7	Jejunostomy for enteral nutrition	4	100,0
Gastric cardia	1	2,2	Jejunostomy for enteral nutrition	1	100,0
Gastric body	23	50,0	Jejunostomy for enteral nutrition	14	60,9
			Subtotal gastrectomy, omentectomy, D1 lymphadenectomy, GJ-Polya Billroth II	7	30,4
			Exploratory laparotomy - biopsy, suturing and epiploplasty	2	8,7
Gastric antrum	4	8,7	Long loop antecolic GJ derivative procedure with jejuno-jejunostomy - subtotal gastrectomy, GY-Polya Billroth II	2	50,0
			Subtotal gastrectomy, omentectomy, D1 lymphadenectomy, GY-Polya Billroth II	1	25,0
			Hemigastrectomy omentectomy, lymphadenectomy D1, GY-Polya Billroth II	1	25,0
Gastric pylorus	4	8,7	Subtotal gastrectomy, omentectomy, D1 lymphadenectomy, GJ-Polya Billroth II	2	50,0
			Hemigastrectomy omentectomy, lymphadenectomy D1, GY-Polya Billroth II	1	25,0
			Long loop antecolic GJ bypass procedure with jejuno-jejunostomy	1	25,0
Fundus-cardia-body	1	2,2	Jejunostomy for enteral nutrition	1	100,0
Body-gastric antrum	1	2,2	Jejunostomy for enteral nutrition	1	100,0
Body- antrum-pylorus	2	4,3	Jejunostomy for enteral nutrition	2	100,0
Gastric antrum-pylorus	6	13,0	Long loop antecolic GJ derivative procedure with jejuno-jejunostomy-jejunostomy	3	50,0
			Hemigastrectomy omentectomy, D1 lymphadenectomy, GY-Polya Billroth II	1	16,7
			Alimentary jejunostomy	1	16,7
			Exploratory laparotomy-gastrotomy, ligation by transfixation bleeding ulcer, biopsy, gastrorraphy, toilette and drainage	1	16,7

Legend: GJ: gastrojejunostomy, (*): % calculated with respect to n = 46; (++): % calculated with respect to n of each tumor location

It is interesting to note that in 10.9 % of the patients studied, surgical reintervention was necessary: in three due to evisceration, one due to dehiscence of the gastrojejuno anastomosis suture and another due to dehiscence of the suture and epiploplasty of the ulcer.

Table 5 shows that 28.3 % of the patients were diagnosed with some postoperative complication. 21.7 % presented surgical complications. 21.7 % presented surgical complications and 26.1 % presented non-surgical complications. The most frequent surgical complications were wound sepsis and evisceration. The most common non-surgical complication was pulmonary thromboembolism.

Table 5: Characterization of the patients according to the frequency of postoperative complications of gastric cancer

Postoperative complications*†		No.	%
Surgical complications (n=10; 21,7 %) ‡	Wound sepsis	3	23,8
	Evisceration	3	23,8
	Wound seroma	2	15,5
	Dehiscence of the suture and ulcer epiploplasty	1	7,7
	Dehiscence of the gastrojejuno anastomosis	1	7,7
Nonsurgical complications (n=12; 26,1 %) ‡	Pulmonary thromboembolism	5	38,5
	Healthcare-associated pneumonia	3	23,8
	Adult respiratory distress syndrome	2	15,5
	Prerenal acute renal failure	2	15,5

Legend: (*): a patient could present more than one type of complication; (†): % were calculated with respect to the total number of patients who presented complications (n = 13), (‡):% were calculated with respect to the total number of patients studied (n = 46)

It is considered commendable to comment that 91.3 % of the patients were discharged alive and the lethality of gastric cancer treated in the General Surgery service was 8.7 %. Pulmonary thromboembolism was the main cause of death (6.5 %).

DISCUSSION

The results of this study reveal that the frequency of gastric cancer according to age and sex are in harmony with those of Díaz del Arco, et al.[6], Morales de la Torres, et al.[7], Valenzuela, et al.[8] and Castaño Llano, et al.[9], who pointed out that this type of cancer is more prevalent between 60 and 79 years of age and in the male sex. Other authors such as Martínez Carrillo, et al.[10] and Chan, et al.[11], found a higher frequency in the fifth and sixth decades of life.

Studies carried out in Cuba[12,13]) identify a predominance and higher mortality of gastric cancer in the male sex and that the latter increased from the sixth decade of life onwards. In summary, in the studies consulted it is expressed that gastric cancer predominates in men and the frequency increases with age,[10,11,12] very probably due to the accumulation of risk factors for this type of cancer.

In the persons studied, smoking was the most identified risk factor for gastric cancer, a relationship noted by different researchers who believe that cigarette smoke contains carcinogenic nitrosamines and that this increases the risk, especially for cancer in the upper section of the stomach, close to the esophagus.[10,14]

Other risk factors found in the medical literature includes older age, male gender, unhealthy diet (poor in fruits and vegetables, high salt content, smoked or preserved foods); chronic atrophic gastritis, intestinal metaplasia, gastric adenomatous polyps, previous stomach surgery, pernicious anemia, type A blood, first-degree family history of stomach cancer, obesity, ethnicity (Hispanic, Asian/Pacific Islander, and black), geography (more common in Japan, China, Eastern and Southern Europe, Central and South America, and South America), occupations (coal, metal, and rubber workers), gastric infection (Helicobacter pylori, mycoplasma, mycoplasma, and gastric cancer), and gastric infection (Helicobacter pylori, Helicobacter pylori, mycoplasma, and mycoplasma). (More frequent in Japan, China, Eastern and Southern Europe, Central and South America), occupations (coal, metal and rubber workers), gastric infection (Helicobacter pylori, mycoplasma, Epstein-Barr virus, cytomegalovirus), among others.[10,11,14,15]

The clinical presentation of gastric cancer is variable. Abdominal pain was the most common symptom, which coincides with the report of Martínez Carrillo, et al.[10], Ruiz de Las Labranderas, et al.[16] and Buján, et al.[17], who point out that it usually presents as an asymptomatic disease or by epigastric and dyspepsia. Cancer was more common in the gastric body, with predominance in the lesser curvature, similar information was offered by Raw and Barsouk[14] and Rojas Montoya, et al.[18] However, Li and Gao[19] and Chiu,et al.[20], indicate a higher frequency in the antrum or in the distal third of the stomach.

Moderately differentiated intestinal adenocarcinoma was the most frequently diagnosed gastric cancer, a result analogous to that reported by Umpiérrez-García, et al.[3], Cárdenas Martínez, et al.[4], Morales de la Torre, et al.[7] and Canseco Ávila, et al.[15], who state that adenocarcinoma determines between 90 % and 95 % of these cancers. On the other hand, Mercado Castro, et al.[5] and Martínez Carrillo, et al.[10] point out that stomach cancer of the intestinal type is more frequent in people over 50 years of age and in men. These comments support the observed results.

The highest percentage of affected persons was diagnosed in stage IV and palliative treatment was applied. A result analogous to those of Mercado Castro and Rojas Vásquez[5] and Castaño Llano, et al.[9] It is stated that gastric cancer presents in early stage in 10% to 20% of those affected, about 30% of these are candidates for curative treatment, up to 40% are inoperable and only 32% are resectables.[7,9]

The surgical techniques used for gastric cancer in the patients studied are consistent with the opinions of other authors.[21,22]The fundamental idea has been that surgery is the only treatment with curative potential, especially in its early stage, because it has allowed resection of the tumor lesion and the required lymphadenectomy. However, endoscopic resection called mucosectomy and submucosal dissection, which allow curative treatment and preservation of the organ, in case of early stage gastric cancer without lymph node metastasis, are also considered.[21,22]

In relation to postoperative complications, the results are considered casual. We agree with authors[14,15] who point out the high frequency of sepsis associated with health care.

The following limitations were recognized in this study: it was not possible to identify infections as a risk factor for gastric cancer due to technological deficiencies; its retrospective nature prevented the analysis of tumor size and morphology, as well as the assessment of dietary habits and lifestyles; its design did not allow the analysis of patient survival. Finally, no studies were found in the context of Guantanamo that approached the subject, which prevented comparing the results with territorial studies, although this way, the novelty of the research is revealed as it offers a theoretical reference that made this intention possible and enriches the theoretical on the subject.

CONCLUSIONS

Gastric cancer was more frequent in men, older adults and smokers. It was mostly manifested an abdominal pain syndrome localized in the gastric body. The most common histologic type was moderately differentiated intestinal adenocarcinoma. Most of them were stratified in stage IV, the most applied surgical technique was alimentary jejunostomy and pulmonary thromboembolism was the most common complication.

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Conflict of interest:
The authors declare that there is no conflict of interest

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Financing:
The authors did not receive funding for the development of the present research