Management of gastric cancer in the surgery service of the Military Hospital, period 2017-2022

Manejo del cáncer gástrico en el servicio de cirugía del Hospital Militar, periodo 2017-2022

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ABSTRACT

Introduction: In Paraguay, the incidence of gastric cancer is relatively low, ranking fifth among the most common types of cancer. According to data from the Ministry of Public Health and Social Welfare, this type of cancer accounts for 7.2 % of all registered cases.**Objective:** To describe the management of Gastric Cancer in the Surgery Department of the Military Hospital, Asunción - Paraguay, during the period 2017-2022. **Materials and Methods:** A descriptive, retrospective, cross-sectional observational study. Data were collected through a review of medical records. **Results:** A total of 13 patients were evaluated, of whom 11 were men and 2 were women, with an average age of 66 years. The most common reason for consultation was a sensation of gastric fullness accompanied by weight loss. In most cases, the diagnosis was made at advanced stages. The most commonly used diagnostic methods were upper digestive endoscopy with biopsy for histological analysis and computed tomography for staging. The most frequent surgical technique was subtotal gastrectomy. **Conclusion:** The experience at the Central Hospital of the Armed Forces demonstrated final results that are similar and comparable to those obtained in world-class centers dedicated to gastric cancer.

Keywords: Gastric cancer, Helicobacter Pylory, Peptic ulcer, Original article, Epidemiology.

RESUMEN

Introducción: En Paraguay, la incidencia de cáncer gástrico es relativamente baja, ubicándose en el quinto lugar entre los tipos de cáncer más frecuentes, según datos del Ministerio de Salud Pública y Bienestar Social este tipo de cáncer representa el 7,2 % del total de casos registrados. [1] **Objetivo:** Describir el manejo del Cáncer Gástrico en el Servicio de Cirugía del Hospital Militar, Asunción - Paraguay durante el periodo 2017-2022. Materiales y métodos: Estudio observacional descriptivo, retrospectivo de corte transversal. Se realizó el reclutamiento de datos por medio de la revisión de historias clínicas. **Resultados:** Se evaluó un total de 13 pacientes, de los cuales 11 fueron hombres y 2 mujeres, con una edad promedio de 66 años. El motivo de consulta más frecuente fue la sensación de plenitud gástrica acompañada de pérdida de peso. En la mayoría de los casos, el diagnóstico se realizó en estadios avanzados. Los métodos diagnósticos más utilizados fueron la endoscopia digestiva alta con toma de biopsia para el análisis histológico y la tomografía computarizada para la estadificación. La técnica quirúrgica más frecuente fue la gastrectomía subtotal. **Conclusión:** La experiencia en el Hospital Central de las Fuerzas Armadas demostró resultados finales que son similares y comparables a los obtenidos en centros de excelencia a nivel mundial dedicados a cáncer gástrico.

Palabras clave: Cáncer gástrico, Helicobacter Pilory, Ulcera péptica, Articulo original, Epidemiologia.

INTRODUCTION

In Paraguay, gastric cancer incidence is relatively low, placing fifth amongst the most frequent types of cancer, according to data from the Ministry of Public Health and Social Wellbeing (Ministerio de Salud Pública y Bienestar Social), and representing 7.2% of cases according to GLOBOCAN 2020 statistics. Worldwide, gastric cancer is the fifth most frequent neoplasia, with a 5.6% incidence according to the World Health Organization's (WHO) International Agency for Research on Cancer (IARC). In 2018, approximately 1,034,000 new gastric cancer cases were registered worldwide, with a high mortality rate of 7.7% (768.793 deceased).[(1)]

In the present day, the average age for gastric cancer diagnosis is approximately 69 years old. Men have twice as much of a risk to develop the disease in comparison to woman. The incidence is also greater in people of color in comparison to white people.

Gastric cancer prevention can be boarded in three levels:

- Primary prevention focuses on reducing the exposure to risk factors and strengthening the gastric mucosa's resistance to them.
- Secondary prevention consists of early detection of the disease and opportune treatment for a better situation.
- Tertiary prevention includes treatment, rehabilitation and palliative care with the objective to enhance the quality of life of patients diagnosed with gastric cancer. [(2)]

Gastric cancer usually manifests unspecific symptoms, which tend to lead to late diagnosis and reduces the chances of a successful healing treatment.

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Diagnosis is mainly performed through upper digestive endoscopy with biopsy sample. To evaluate the disease's reach, computed tomography scan is the test of choice, although in some cases a diagnostic laparoscopy can be needed. The tumor's staging can be classified into localized, locally advanced, or metastatic disease.

There are several histopathological classifications of gastric cancer, with the Lauren and WHO's being the most utilized classifications. Within this frame, two main histological variants are recognized: diffuse and intestinal type.[3]

Worldwide, it has been established that subtotal or total gastrectomy, along with D2 lymphnodal dissection, is the standard surgical treatment for gastric cancer patients in incipient and advanced states. Endoscopic techniques are reserved for very specific cases, while laparoscopic surgery is still in development and evaluation. [2]

The objective of this work is to analyze the handling of gastric cancer in the Military Hospital's Surgery Service from 2017-2022 and use the data to optimize attention strategies. The goal is to highlight the importance of early diagnosis, correct staging and adequate treatment for each case, looking to improve the patients' quality of life.

While Paraguay's Military Hospital isn't a reference center for oncology, it also offers care to cancer patients who seek medical assistance.

MATERIALS Y METHODS

15 clinical files of patients attended at Paraguay's Military Hospital January 2017 to December 2022 were analyzed. Two patients were excluded due to the stablished exclusion criteria. The study had an observational, descriptive, cross-cut, and retrospective design, with non-probabilistic sampling of consecutive cases.

The study population included patients with gastric cancer diagnosis, while accessible population was limited to those who reported to the urgency service or the Military Hospital consultation.

The inclusion criteria were:

- Patients of both genders, older than 18 years old, who reported to the Military Hospital's consultation or urgent care.
- Confirmed gastric cancer diagnosis through anatomopathological analysis, in any stage of the disease.

Patients with incomplete clinical files were excluded.

Cases were identified through the file system of the Military Hospital's Admission Department. From this information, relevant clinical history was selected and the necessary data for the study was registered.

For data collection, a form previously designed by the author was used, in which variables of interest were included with their respective codes. Data was inputted into a digital Excel sheet and analyzed descriptively. Frequency was calculated for qualitative variables, while the average, mean and standard deviation was determined for quantitative variables.

This study respected the ethical principles of research, guaranteeing patient anonymity and confidentiality. Information was presented globally in the corresponding scientific scopes. Given its retrospective character, the charity principle didn't directly impact the patients whose data was used, but the results could contribute to the betterment of clinical handling in the future.

All included patients reported to the Military Hospital voluntarily and received diagnostic, therapeutic, and preventive procedures indicated by a physician, along with the corresponding signed consent.

This investigation was performed upholding the requirements for postgraduate promotion in General Surgery. All study expenses were self-funded by the author, who declares no conflict of interests.

The study fulfilled the current ruling regarding bioethical investigation and had authorization from the Military Hospital of Paraguay's Ethical Committee. Likewise, it's assured that this article doesn't contain personal information that allows patient identification.

Bibliography was obtained through search engines and organized according to reference guidelines, using the Zotero application.

RESULTS

In this study, patients with confirmed gastric cancer diagnosis were included, based on clinical, laboratorial and imaging criteria.

Most cases corresponded to male patients, while female patients were of lesser proportion.

Regarding age, the average was within the sixth decade of life, with an ample range which included from the fifth up to the ninth decade. A moderate variability in the registered values was also observed.

The age by gender distribution is represented in Table 1.

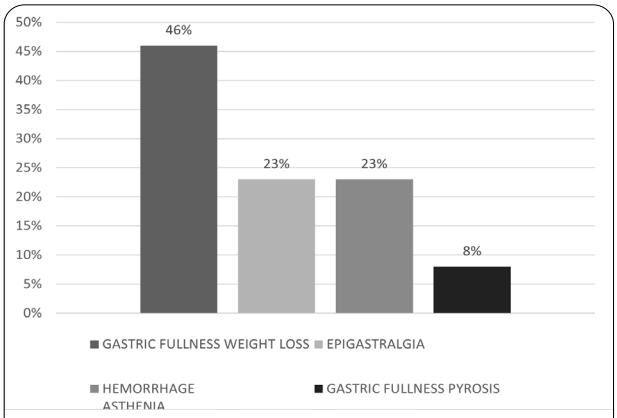
Table 1. Age data according to gender. (n=13)

Gender	Average Age	Range	Standard Deviation
Female (n=2)	55	55- 56	0,70
Male (n=11)	68	53- 92	13,5

Regarding the patients' origin, 31% came from urban areas, while 69% lived in rural areas.

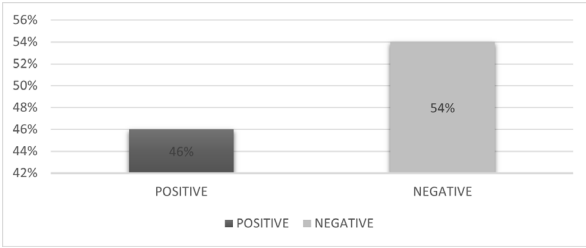
As for symptoms presented by gastric cancer patients, simultaneous emergence of more than one symptom was seen in most cases. The most frequent combination was gastric fullness sensation accompanied by weight loss.

Distribution of other symptom combinations is presented in Graph 1.



Graph 1. Frequency of different signs and symptoms (n=13)

The presence of infection by Helicobacter pylori was evaluated through serological tests and anatomopathological analysis. It was determined that a considerable proportion of patients presented a positive result, while there was no infection in the rest. It's worth pointing out that the results obtained by both methods were consistent in every case analyzed.



Graph 2. H. Pilory presence in serology and biopsy (n=13)

Through laboratory studies, CA 19-9 tumoral marker's values were researched, finding that in nine patients, equal to 69% of the total, presented levels over the reference value. Seven of these had values over 1,200 U/ml.

CA 19-9's value range in studied patients oscillated between 22 and 1,200 U/ml. In those with elevated levels, the average was 863.1 U/ml, with a standard deviation of ±542.4 U/ml. In contrast, patients with values within the normal range presented an average of 23 U/ml, with a standard deviation of ±1.73 U/ml.

As a complementary study, the expression of the HER2/Neu protein was evaluated, finding that five patients, equal to 39% of the sample, had the analysis done. In all cases, the result was negative.

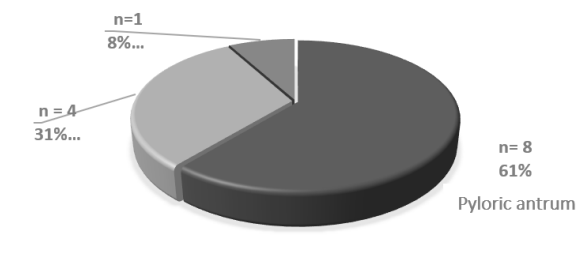
Regarding blood type distribution, the "O Positive" type was observed to be the most frequent among studied patients, followed by other blood types with less representation. Details regarding blood type distribution are presented in Table 2.

Table 2. Blood Type Frequency (n=13)

Blood type	Number of patients	Percentage
O +	6	46%
A+	5	39%
B+	2	15%

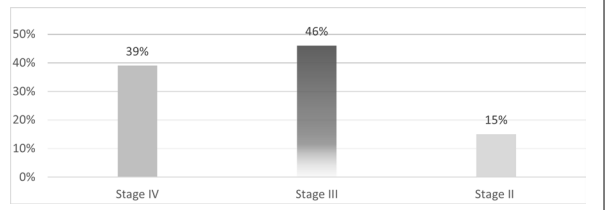
As for the localization of the gastric cancer's initial injury detected by upper digestive endoscopy, the most frequently affected zone was the pyloric antrum, followed by the gastric body region. In lesser proportion, cases in which the gastric fundus was affected were observed.

Frequency of different localizations are presented in Graph 3.



Graph 3. Localization of the gastric cancer's intitial injury.

Most cases were clinically presented in advanced states, with a considerable proportion of patients diagnosed in stages III and IV. These stages represented the great majority of cases, reflecting a high frequency of advanced disease at the time of diagnosis. In lesser proportion, some patients were diagnosed during earlier staging.



Graph 4. Clinical staging of Gastric Cancer patients. (n=13)

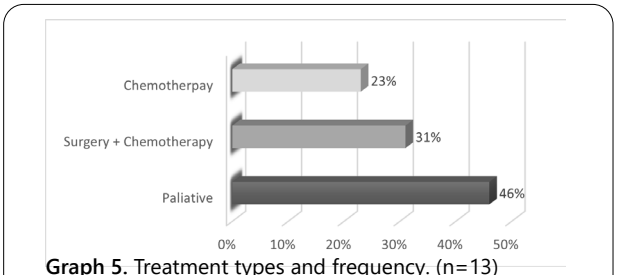
Biopsy allowed us to identify the histological type of the initial injury, with intestinal type being the most frequent, followed by diffuse type, according to the used classification.

In patients submitted to surgery, it was observed that postoperatory histopathological diagnosis corresponded to gastric adenocarcinoma.

Table 3. Anatomopathological finding. Lauren Classification (n=13)

Histological Type	Number of patients	Percentage
Intestinal Type	7	54%
Diffuse Type	6	46%

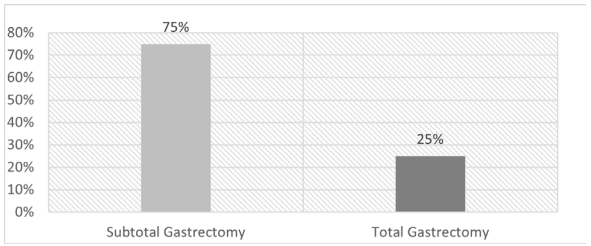
Regarding treatment, some of the patients received a combination of surgery and chemotherapy, while others were treated exclusively with chemotherapy. A large group received palliative management, reflecting the high frequency of cases diagnosed in later stages.



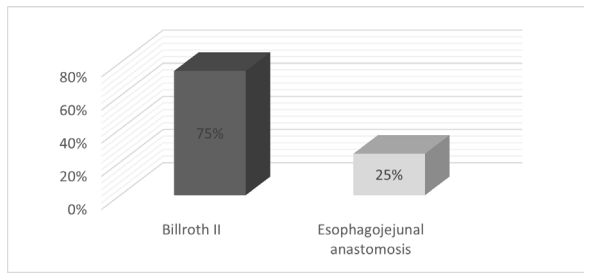
Graph 5. Treatment types and frequency. (n=13)

Following clinical and evolutive criteria, four (31%) patients were surgically intervened and nine (69%) didn't require it or weren't in clinical-surgical conditions to undergo this type of treatment.

Of the surgically intervened patients, 75% had a subtotal gastrectomy with Billroth II reconstruction and 25% were submitted to a total gastrectomy with esophagojejunal anastomosis.



Graph 6. Surgery types performed. (n=4)



Graph 7. Gastric Reconstruction Type (n=4)

Regarding surgically intervened complications, it was observed that two subjects (50%) presented rapid gastric emptying and the other two (50%) didn't present complications.

Patient survivability from the moment of diagnosis is 31% (4 patients) while mortality is 69% (9 patients).

DISCUSSION

Sociodemographic, clinical characteristics, diagnostic studies, initial injury, in-patient stay, treatment options and survivability of gastric cancer patients were analyzed. Despite advances in diagnosis and treatment, this neoplasia is still frequent and highly deadly, although a slight diminishing was registered in the last decades due to the reduction of risk factors such as Helicobacter pylori infection, tabaco consumption and better dieting and food preservation [1]. However, these tendencies vary between regions, reflecting the differences in risk factors' exposition according to population, age and birth cohorts [4].

In this study, 13 patients with a confirmed diagnosis were included through clinical, laboratory and imaging criteria. 65% came from rural areas with low education and income levels, which could influence the disease's progression before medical consultation. The average diagnosis age was 66 years old (53-92 range), and 85% of cases corresponded to men, higher percentage than the one reported in the literature [5]. Gastric cancer incidence scales with age, relating to ageing and chronic inflammation as risk facts [6].

Initial symptoms tend to be unspecific, which delays diagnosis. The most frequent were gastric fullness and weight loss (46%), followed by epigastralgia (23%), which matches with previous studies such as Rodriguez and collaborators' [7]. H. pylori infection is a key factor in gastric carcinogenesis; in the study, 46% of patients presented this infection, backing the evidence that 65-80% of distal gastric cancer cases are associated to H. pylori [8].

As for tumoral markers, CA 19-9 showed greater sensibility (68.8%) than the carcinoembryonic antigen (38.2%). Its positivity in the study was 69%, with an average value of 863.1 U/ml, above the worldwide range (23.1-50%) [9]. The HER2/Neu expression, negative forecast factor, was evaluated in five patients, resulting negative in all cases. However, its high costs limits accessibility.

Blood type A has been associated with greater susceptibility to gastric cancer, however, in this study, the distribution was 46% O+, 39% A+ and 15% B+, in line with other investigations such as Tocino's [10]. The most frequent initial injury was located in the pyloric antrum (61%), followed by gastric body (31%) and proximal third (8%), matching with other studies (2,10). Most cases were diagnosed in advances stages (85%), with a stage III (46%) and IV (39%) predominancy, which reflects a low early detection in the region [11,12].

According to the Lauren classification, the intestinal histological type was the most frequent (54%), without variation in two decades, although in developed countries the proximal gastric cancer of diffuse type has risen [13,14]. Surgery is still the only treatment with healing potential, but only four patients were submitted to surgery. Subtotal distal gastrectomy with Billroth II reconstruction was the most common intervention (75%), followed by total gastrectomy with esophagojejunal anastomosis (25%). Resection increased the survivability of those who only underwent biopsy [15]. Postoperative morbidity was 50%, highlighting rapid gastric emptying syndrome in consonance with other published works [16].

The global mortality in the study was 69%, with 31% survivability. Literature reports a survivability of five years for 30.4%, data which matches with this study. Among the deceased, 56% had survivability of less than a year, and 44% between one and two years. Only one patient was submitted to surgery, while the rest weren't in adequate medical conditions. In the United States, where 60% of patients have a non-resectable disease upon diagnosis, only 25-35% survives five years, numbers comparable to this study [16,17].

Although not a referenced center for oncology, the Military Hospital offers attention to gastric cancer patients. The sampling size could represent a limitation for the generalization of findings.

CONCLUSION

The experience within the hospital evidenced results comparable with the ones obtained in centers specializing in gastric cancer worldwide. It was identified that 85% of patients were male and 15% were female, with an average age of 66 years old. The most commonly reported symptoms at the moment of diagnosis were gastric fullness sensation and weight loss.

It was determined that the most frequent initial injury localization corresponded to the pyloric antrum region, while most cases presented an advanced staging, with 85% being in stages III and IV. Diagnostic studies revealed a significative elevation of the CA 19-9 tumoral marker in 69% of patients, presence of Helicobacter pylori infection in 46%, and negative results in all cases analyzed for HER2/Neu expression. Likewise, it was observed that the most prevalent blood type was O positive.

Anatomopathological analysis revealed that most tumors corresponded to intestinal-type adenocarcinomas. Regarding the therapeutic focus, total and subtotal gastrectomies were performed in combination with neoadjuvant chemotherapy in 31% of cases, while the remaining patients received palliative

treatment.

Survivability evaluation of five years reflected a rate of 31%, contrasting the 69% morality, which evidences the aggressivity of the disease and necessity for early diagnosis to increase clinical results.

AUTHOR'S CONTRIBUTIONS

All authors participated in patient care and the creation of the manuscript.

CONFLICT OF INTERESTS

Authors declare no conflict of interests related to this work.

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BIBLIOGRAPHIC REFERENCES

1. Aranda M, Yanagida F, Petry C. Características clínicas y sociodemográficos de pacientes con diagnóstico de cáncer gástrico en el Hospital Nacional de Itauguá. 2019-2020. Cir Paraguaya. el 7 de diciembre de 2022;46(3):7–11.
2. Csendes A, Figueroa M. Situación del cáncer gástrico en el mundo y en Chile. Rev Chil Cirugia. el 22 de noviembre de 2016;69(6):502–7.
3. Guzman S, Norero E. Cáncer gástrico. Rev Médica Clínica Las Condes. enero de 2014;25(1):105–13.
4. Forman D, Burley VJ. Gastric cancer: global pattern of the disease and an overview of environmental risk factors. Best Pract Res Clin Gastroenterol. enero de 2006;20(4):633–49.
5. Picazo P, Gomez T, Torres T. Gastric Cancer (Stomach Cancer). Cancer Gastrico Atencion Fam. 2018;25(4):169–75.
6. Ramirez A, Sanchez R. Helicobacter Pylori y Cáncer Gástrico. Rev Gastroenterol Peru. julio de 2008;28(3):258–66.
7. Rodriguez F. Cáncer gastrico Diagnostico y manejo. Rev Med Costa Rica. 2014;71(610):339–42.
8. Levi E, Sochacki P, Khoury N, Patel BB, Majumdar AP. Cancer stem cells in Helicobacter pylori infection and aging: Implications for gastric carcinogenesis. World J Gastrointest Pathophysiol. 2014;5(3):366.
9. Sun Z, Zhang N. Clinical evaluation of CEA, CA19-9, CA72-4 and CA125 in gastric cancer patients with neoadjuvant chemotherapy. World J Surg Oncol. 2014;12(1):397.
10. Tocino V, Fonseca E, Cigarral B. Cáncer gástrico. Med - Programa Form Medica Contin Acreditado. enero de 2021;13(24):1328–34.
11. Casariego Vales E, Pita Fernández S, Rigueiro Veloso M, Pértega Díaz S, Rabuñal Rey R, García-Rodeja M, et al. Supervivencia en 2.334 pacientes con cáncer gástrico y factores que modifican el pronóstico. Med Clínica. 2001;117(10):361–5.
12. ESMO. CÁNCER DE ESTÓMAGO: UNA GUÍA PARA PACIENTES. 2020. Cáncer de estomago: una guia para pacientes. Disponible en: https://www.esmo.org/content/download/6632/115227/1.
13. Matta de Garcia V, De leon J. Caracterizacion del Cáncer gastrico. Rev Científica Fac Cienc Quím Farm. el 19 de mayo de 2015;25(2):9–20.
14. Pilco P, Viale S, Ortiz N, Deza C. Cáncer gástrico en un hospital general. Revista Gastroenterologia del Peru. enero de 2009;29(1):66–74.
15. Japanese Gastric Cancer Association. Japanese gastric cancer treatment guidelines 2010 (ver. 3). Gastric Cancer. el 1 de junio de 2011;14(2):113–23.
16. Csendes A, Burdiles P, Rojas J, Braghetto I, Diaz JC, Maluenda F. A prospective randomized study comparing D2 total gastrectomy versus D2 total gastrectomy plus splenectomy in 187 patients with gastric carcinoma. Surgery. abril de 2002;131(4):401–7.
17. Sánchez-Barriga JJ. Tendencias de mortalidad y años potenciales de vida perdidos por cáncer gástrico en México, 2000-2012. Rev Gastroenterol México. abril de 2016;81(2):65–73.