Disease and Diagnosis

Dis Diagn. 2021; 10(2):60-64

doi 10.34172/ddj.2021.12

Original Article

Pathological Indicators for Reporting Gastric Malignancies in a Hospital in Yazd

Kazem Ansari[1], Mehran Jafari[2], Milad Akhlaghi[3], Mohammad Teabpour[4], Mansour Moghimi[5*]

[1]Nano-Biotech Foresight Company Biotechnology Campus, Yazd Stem Cells and Regenerative Medicine Institute, Yazd, Yazd.
[2]Shahid Sadoughi University of Medical Sciences, Yazd, Iran.
[3]Department of Clinical Biochemistry, Faculty of Medicine, Shahid Sadoughi University of Medical Sciences, Yazd, Iran.
[4]Depatment of Medical Biotechnology, Faculty of Medicine, Shahid Sadoughi University of Medical sciences, Yazd, Iran.
[5]Department of Pathology, Shahid Sadoughi University of Medical Sciences, Yazd, Iran.

Abstract

Background: Gastric cancer is one of the most common cancers and is one of the most frequent causes of cancer death worldwide. In recent years, there has been a great deal of emphasis on the use of pathology reporting standards. Therefore, the aim of this study was how to report the pathological indicators of gastric malignancies in samples sent to the Pathology Department of Shahid Sadoughi hospital in Yazd in Iran in 2016-2018.

Materials and Methods: This cross-sectional study was conducted on 174 patients. Study variables including age and gender, type of biopsy, the extent of gastric tissue involvement, exact anatomical location, tumor size, histological grading, invasion of surrounding tissues, and lymph node metastasis were extracted from patients' records. Data were analyzed by SPSS 22. Frequency and percentage were reported using descriptive statistics and Chi-square/Fisher's exact test for qualitative variables and independent sample t-test for quantitative variables. Finally, graphs were drawn using Excel 2010.

Results: Out of 174 participants, 63.8% were females (n = 111). Most reports were related to the histology of adenocarcinoma (n = 136, P=78.20), tumor size (n = 89, P=51.15), and anatomical exact location (n = 90, P=51.70), respectively. Regarding the exact anatomical location of 90 patients, most reports were related to the antrum (n = 38, P=42.23). The highest prevalence of histological type of adenocarcinoma was related to poorly differentiated cases (n = 57, P=41.94).

Conclusion: The findings of this study showed that the method of reporting pathological indicators in gastric malignancies in the studied cases was somewhat appropriate.

Keywords: Pathological indicators, Gastric malignancies, Iran

***Correspondence to**
Mansour Moghimi,
Department of Pathology,
Shahid Sadoughi University of Medical Sciences, Yazd, Iran.
Tel: 09131517331
Email : Dr_mansour_moghimi@yahoo.com

Received: April 26, 2021, Accepted: June 19, 2021, ePublished: June 28, 2021

Introduction

The stomach is the most common site of involvement in the gastrointestinal tract (1). Gastric cancer (GC) is a cancer that develops in the lining of the stomach. The most common type of GC is gastric carcinoma, one of which is gastric adenocarcinomas (2-4). Approximately 90% of stomach cancers are adenocarcinomas (5).

GC is a multifactorial disease (6) and its risk factors include *Helicobacter pylori* and Epstein-Barr virus infections, family history, alcohol consumption, smoking, diet, history of an adenomatous gastric polyp larger than 2 cm, alcohol, and ow socioeconomic status (7, 8).

The epidemiology of GC varies in different geographical areas and its incidence is between 5 and 10 times (9). GC is the fourth most prevalent cancer and the second leading cause of cancer death in the world (10). In 2017, more than 1.22 million cases of GC occurred in the world and nearly 865,000 patients died from the disease. The highest incidence of GC in 2017 was reported in China, which has almost half of the cases (11). The average 5-year survival rate of GC is 20% (12).

The use of pathology reporting standards has received great attention in recent years (13). The first serious actions in this field were taken by specialized oncology centers in the form of cancer screening programs. For example, the Royal College of Pathologists has set specific standards for this purpose in the United Kingdom (14). The pathology report provides information that helps to stage the patient's tumor. The pathology report is highly helpful in determining the status, stage of the tumor,

patient's prognosis, and the need for further treatment. Because the prognosis is poor in gastrointestinal cancers such as gastric and esophageal cancers, the pathology report is highly helpful in determining the status, stage of the tumor patient's prognosis, and the need for further treatment(15). The number and location of lymph nodes, the involvement of the tumor margin, and the rate of response to neoadjuvant treatments, and tumor classification based on the tumor–node–metastasis (TNM) system are important in this regard. In addition, histopathology reports have been effective in conducting research, especially on the effectiveness of neoadjuvant therapies (13). According to the protocol of the American Society of Pathologists, important factors include the type of the surgery, the exact location of gastric involvement by the tumor, tumor size and type, tumor invasion to the surrounding tissues and the involved lymph nodes, and tumor margin, which are important in determining prognosis (16).

Iran is one of the developing countries that is located in the Middle East (17). GC is one of the most common cancers in Iran among men and women. The age-standardized incidence rate of GC is 110 and 98 per 100 000 for males and females, respectively (18). Recently, environmental risk factors for GC in Iran have included *Helicobacter pylori* infection, gastroesophageal reflux disease, smoking, and intake of salt (19).

Therefore, it is important to pay attention to the observance of standards in pathology reporting. The aim of this study was to investigate the report of pathological indicators in gastric malignancies in samples sent to the Pathology Department of Shahid Sadoughi hospital in Yazd, Iran in 2016-2018.

Materials and Methods

Study Design and Participants

The present cross-sectional study included all patients of gastric adenocarcinoma who underwent gastric biopsy for any reason and were admitted to Shahid Sadoughi hospital in Yazd, Iran during 2016-2018. The exclusion criteria were incomplete medical records. Data were collected with a checklist from the pathology records of patients using a census sampling method. Macroscopic and microscopic findings among the samples were examined as well. Study variables including age and gender, type of biopsy, the extent of gastric tissue involvement, exact anatomical location, tumor size, histological grading, invasion of surrounding tissues, and lymph node metastasis were extracted from patients' records. Standard indicators in reporting malignant gastric pathology included:

1. Type of sampling
2. Type of adenocarcinoma
3. The exact location of the tumor
4. Tumor size
5. Tumor grade
6. Place and extent of invasion in case of invasion
7. Sample margin conflicts
8. Presence or absence of vascular-lymphatic invasion
9. The presence or absence of invasion around the nerve
10. Presence or absence of the invasion of regional lymph nodes
11. Classification of tumors
12. Other pathology findings.

Statistics Analysis

Data were analyzed using SPSS software, version 22. Frequency (F) and percentage (P) were reported by applying descriptive statistics. Further, Chi-square/ Fisher's exact test and independent sample *t* test were employed for qualitative and quantitative variables, respectively. Graphs were drawn using Excel 2010.

Results

The current study was conducted on 174 patients, 63.8% of whom were females (n = 111). Moreover, 1.7% (n =3) of the cases in our study were gastrectomy.

Most reports were related to the histology of adenocarcinoma (n = 136, $P=78.20$), tumor size (n =

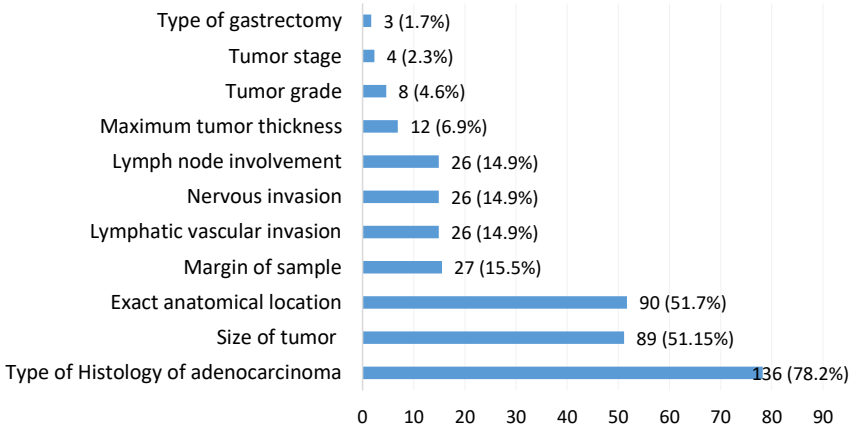

Figure 1. Prevalence of Reporting the Studied Variables.

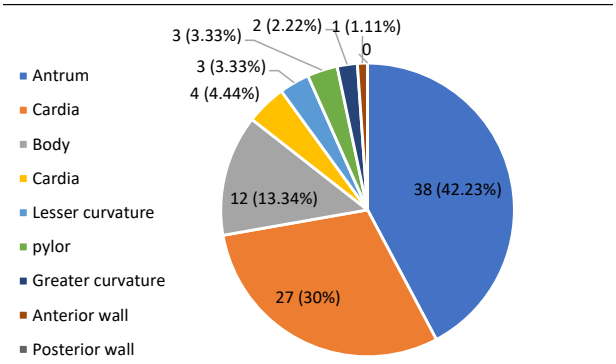

Figure 2. Percentage of Anatomical Exact Location Reports.

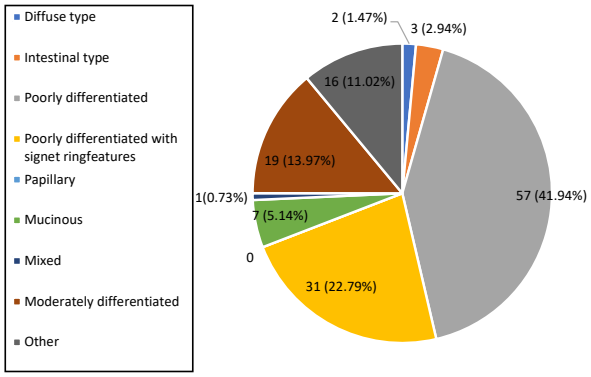

Figure 3. Percentage of Frequency of Adenocarcinoma Histology Type Report.

89, $P=51.15$), and anatomical exact location (n = 90, $P=51.70$), respectively (Figure 1).

Among the 90 patients for whom the exact anatomical location was reported, the most reports belonged to the antrum (n = 38, $P=42.23$), cardia (n = 27, $P=30$), and wind (n = 12, $P=13.34$), respectively (Figure 2).

The histological type of adenocarcinoma was reported in 136 cases. The highest prevalence was related to poorly differentiated (n = 57, $P=41.94$), poorly differentiated with signet ring features (n = 31, $P=22.79$), and (n = 19, $P=13.97$), respectively (Figure 3).

Discussion

Sufficient pathology reporting of GC specimens is necessary for the management of patients to decide on the type of treatment including neoadjuvant and adjuvant therapy, staging, and cancer service organization. Therefore, it is highly important that histopathology reports should meet the minimum standards. Unfortunately, none of the reports had all of the relevant information. To the best of our knowledge, this study is the first one to investigate pathological indicators for the report of GC with a remarkable sample size in Yazd. Accordingly, this study was performed to investigate pathological indicators for the report of gastric malignancies in a hospital in Iran. In our study, 1.7% of the cases reported a type of gastrectomy. The findings of the study performed by Nourozinia et al on 452 patients with GC in Urmia province showed that 12% of them underwent gastrectomy, which is better compared to our findings (20).

According to the results of this study, tumor size and histological type of adenocarcinoma were reported in 51.15% and 78.2%, respectively. In another study evaluating 56 pathology reports, 80.4% did not determine the type of tumor subtype, 16.1% did not report tumor stage, and 10.7% did not report tumor size (21). In the study by Bull et al in the United Kingdom, the type of gastric adenocarcinoma was reported in the pathology of 77% of patients (22), which is in line with our findings.

In our study, the exact anatomical location of the tumor was reported in 51.7% of patients. According to the results of our study, the exact anatomical location of the tumor was 42.23%, 30%, and 13.34% in the antrum, the cardia, and the body, respectively. The results of the study conducted by Hashemi et al on 350 people in Rasoul Akram, Firoozgar, and Haft Tir hospitals revealed that adenocarcinoma was more common in the proximal part and lymphoma in the middle part of the stomach (23).

In another study conducted in Urmia province, the most common site of adenocarcinoma was reported in small curvature and cardia, and the most common anatomical position in this study was the antrum (20), which is inconsistent with the results of our study.

In our study, the sample margin was not reported in 84.5% of cases. As a result, the sample margin was not reported in most cases. In a study conducted in Yazd, 57.1% of the samples did not report tumor margins (21).

The results of our study showed that the maximum thickness of the tumor was reported in 6.9% of cases. The highest and the minimum thickness in these findings were 2.5 mm and 0.5 mm, respectively. Given that the maximum tumor thickness was not reported in most cases in our study, the results could not be reliable. Furthermore, tumor size was reported in 51.15% of cases and the maximum and minimum sizes were 23 mm and 0.3 mm, respectively.

In our study, lymphovascular and perineural invasions were reported in 14.9%. This report was not mentioned in 85.1% of cases. Tumor stage and tumor grade were reported in 2.3% and 4.6% of cases, respectively, and as a result, tumor stage and grade were not mentioned in most cases. In reviewing similar studies, no useful information was found to examine the consistency and inconsistency with our study, and these results could be useful for future studies.

The strength of our study is that there were limited studies that evaluated the indicators of pathological reporting in Iran. These studies can provide more complete patient record forms in the treatment process. The number of reports is the limitation of this study.

Conclusion

According to the results of our study, the reports of GC pathology samples need to improve the content based on the existing standards. The use of pathology reporting standards can have a significant impact on the patient's treatment and recovery process. Therefore, deficiencies in reporting forms can be significantly improved by using a systematic approach such as the same correct templates.

Conflict of Interest Disclosures

There is no conflict of interests.

Acknowledgment

The authors thank the participants in this study. Special thanks go to the staff of the Shahid Sadoughi Hospital in Yazd, Iran for collecting data.

Ethics Statement

This study was approved by Shahid Sadoughi University of Medical Sciences (the code of ethics: ir.ssu.medicine.rec.1398.360).

Authors' Contributions

MM, KA, MJ, MA, and MT equally contributed to the conception and design of the research. They participated in the acquisition and analysis of the data. All authors critically revised the manuscript, agreed that journal pre-proof be fully accountable for ensuring the integrity and accuracy of the work, and read and approved the final manuscript.

Funding/Support

This work was supported by Shahid Sadoughi University of Medical Sciences, Yazd, Iran.

Informed Consent

Not applicable.

References

1. Papaxoinis G, Papageorgiou S, Rontogianni D, Kaloutsi V, Fountzilas G, Pavlidis N, et al. Primary gastrointestinal non-Hodgkin's lymphoma: a clinicopathologic study of 128 cases in Greece. A Hellenic Cooperative Oncology Group study (HeCOG). Leuk Lymphoma. 2006;47(10):2140-6. doi: 10.1080/10428190600709226.
2. Liu Q, Zeng X, Wang W, Huang RL, Huang YJ, Liu S, et al. Awareness of risk factors and warning symptoms and attitude towards gastric cancer screening among the general public in China: a cross-sectional study. BMJ Open. 2019;9(7):e029638. doi: 10.1136/bmjopen-2019-029638.
3. Pasechnikov V, Chukov S, Fedorov E, Kikuste I, Leja M. Gastric cancer: prevention, screening and early diagnosis. World J Gastroenterol. 2014;20(38):13842-62. doi: 10.3748/wjg.v20.i38.13842.
4. Virmani V, Khandelwal A, Sethi V, Fraser-Hill M, Fasih N, Kielar A. Neoplastic stomach lesions and their mimickers: spectrum of imaging manifestations. Cancer Imaging. 2012;12(1):269-78. doi: 10.1102/1470-7330.2012.0031.
5. He YT, Hou J, Chen ZF, Qiao CY, Song GH, Meng FS, et al. Trends in incidence of esophageal and gastric cardia cancer in high-risk areas in China. Eur J Cancer Prev. 2008;17(2):71-6. doi: 10.1097/CEJ.0b013e3282b6fd97.
6. Yusefi AR, Bagheri Lankarani K, Bastani P, Radinmanesh M, Kavosi Z. Risk factors for gastric cancer: a systematic review. Asian Pac J Cancer Prev. 2018;19(3):591-603. doi: 10.22034/apjcp.2018.19.3.591.
7. Machlowska J, Baj J, Sitarz M, Maciejewski R, Sitarz R. Gastric cancer: epidemiology, risk factors, classification, genomic characteristics and treatment strategies. Int J Mol Sci. 2020;21(11):4012. doi: 10.3390/ijms21114012.
8. Hundahl SA, Phillips JL, Menck HR. The National Cancer Data Base Report on poor survival of U.S. gastric carcinoma patients treated with gastrectomy: Fifth Edition American Joint Committee on Cancer staging, proximal disease, and the "different disease" hypothesis. Cancer. 2000;88(4):921-32.
9. Bray F, Ferlay J, Laversanne M, Brewster DH, Gombe Mbalawa C, Kohler B, et al. Cancer Incidence in Five Continents: inclusion criteria, highlights from Volume X and the global status of cancer registration. Int J Cancer. 2015;137(9):2060-71. doi: 10.1002/ijc.29670.
10. Ferlay J, Shin HR, Bray F, Forman D, Mathers C, Parkin DM. Estimates of worldwide burden of cancer in 2008: GLOBOCAN 2008. Int J Cancer. 2010;127(12):2893-917. doi: 10.1002/ijc.25516.
11. Etemadi A, Safiri S, Sepanlou SG, Ikuta K, Bisignano C, Shakeri R, et al. The global, regional, and national burden of stomach cancer in 195 countries, 1990-2017: a systematic analysis for the Global Burden of Disease study 2017. Lancet Gastroenterol Hepatol. 2020;5(1):42-54. doi: 10.1016/s2468-1253(19)30328-0.
12. Matsuda T, Ajiki W, Marugame T, Ioka A, Tsukuma H, Sobue T. Population-based survival of cancer patients diagnosed between 1993 and 1999 in Japan: a chronological and international comparative study. Jpn J Clin Oncol. 2011;41(1):40-51. doi: 10.1093/jjco/hyq167.
13. Jun JK, Choi KS, Lee HY, Suh M, Park B, Song SH, et al. Effectiveness of the Korean National Cancer Screening Program in reducing gastric cancer mortality. Gastroenterology. 2017;152(6):1319-28.e7. doi: 10.1053/j.gastro.2017.01.029.
14. Williams J, Quirke P, Shepherd N. Dataset for Colorectal Cancer. 2nd e. London: Royal College of Pathologists; 2007.
15. King PM, Blazeby JM, Gupta J, Alderson D, Moorghen M. Upper gastrointestinal cancer pathology reporting: a regional audit to compare standards with minimum datasets. J Clin Pathol. 2004;57(7):702-5. doi: 10.1136/jcp.2003.013326.
16. Torous VF, Simpson RW, Balani JP, Baras AS, Berman MA, Birdsong GG, et al. College of American pathologists cancer protocols: from optimizing cancer patient care to facilitating interoperable reporting and downstream data use. JCO Clin Cancer Inform. 2021;5:47-55. doi: 10.1200/cci.20.00104.
17. Rafiemanesh H, Rajaei-Behbahani N, Khani Y, Hosseini S, Pournamdar Z, Mohammadian-Hafshejani A, et al. Incidence trend and epidemiology of common cancers in the center of Iran. Glob J Health Sci. 2015;8(3):146-55. doi: 10.5539/gjhs.v8n3p146.
18. Mousavi SM, Gouya MM, Ramazani R, Davanlou M,

Hajsadeghi N, Seddighi Z. Cancer incidence and mortality in Iran. Ann Oncol. 2009;20(3):556-63. doi: 10.1093/annonc/mdn642.
19. Farhood B, Geraily G, Alizadeh A. Incidence and mortality of various cancers in Iran and compare to other countries: a review article. Iran J Public Health. 2018;47(3):309-16.
20. Nourozinia F, Rasmi Y, Otarod M, Golizadeh M, Khadem-Ansari MH. Epidemiology and histopathology of gastric cancer in Urmia. Urmia Med J. 2013;24(3):170-5. [Persian].
21. Akhavan A. Audit of gastric cancer pathology reports in Yazd. Middle East J Cancer. 2011;2(3-4):113-6.
22. Bull AD, Biffin AH, Mella J, Radcliffe AG, Stamatakis JD, Steele RJ, et al. Colorectal cancer pathology reporting: a regional audit. J Clin Pathol. 1997;50(2):138-42. doi: 10.1136/jcp.50.2.138.
23. Faramarzi A, Ashraf MJ, Hashemi B, Heydari ST, Saif I, Azarpira N, et al. Histopathological screening of tonsillectomy and/or adenoidectomy specimens: a report from southern Iran. Int J Pediatr Otorhinolaryngol. 2009;73(11):1576-9. doi: 10.1016/j.ijporl.2009.08.008.