

## Audit of Gastric Cancer Pathology Reports in Yazd

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### Abstract

**Background:** The intent of this study was to audit and evaluate the information content of pathology reports of resected gastric cancer specimens in Yazd, Iran.

**Methods:** All gastric cancer reports of patients from the histopathology laboratories in Yazd over a six-year period who referred for adjuvant radiation therapy to Shahid Ramazanzadeh Radiation Oncology Center were evaluated for their information content. A standard was adapted from the Nationwide guideline, version 1.0 of Netherland that explained the minimum data set for gastric cancer pathology reports that included: histologic type, grade, T stage, N stage, distance between the tumor and nearest resection margin, tumor size and, location, as well as perineural, lymphatic and vascular invasion.

**Results:** We audited 56 reports. Unfortunately, none of the reports were adequate. Tumor subtype was not reported in 80.4% of patients, grade in 16.1%, T stage in 8.9%, N stage in 26.8%, margin in 57.1%, tumor size in 10.7%, and location in 41.1%.

**Conclusion:** This audit showed a need to improve the information content of gastric cancer pathology reports. The widespread implementation of template proforma reporting is proposed as the most effective way of achieving this goal. On the other hand, improving surgical techniques, adequate lymph node resection and tumor resection with adequate margins is necessary

**Keywords:** Gastric cancer, Audit, Pathology report, Yazd

### Introduction

Throughout the 20<sup>th</sup> century, adenocarcinoma of the stomach has been the leading cause of cancer-related deaths worldwide. It now ranks second only to lung cancer.<sup>1</sup> According to global estimates, more than 930,000 new cases of gastric cancer are diagnosed each year and

a minimum of 700,000 patients die from this disease.<sup>2</sup> In Iran, this is a fatal, endemic disease with about 7300 new cases diagnosed annually. Gastric cancer is the most common cancer in men. Mortality from gastric cancer is also the first cause of death due to cancer in both sexes in Iran.<sup>3</sup> Surgery is the primary treatment. Adequate surgical resection,

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including resecting a minimum of 15 lymph nodes (LNs) is mandatory for accurate staging and improved outcome.

On the other hand, the decision for adjuvant therapy depends on the pathology report. Usually it is proposed for the patients at T2-T4 stages and/or LN positive patients. If the pathology report is incomplete, it is difficult for the radiation oncologist to determine an adequate treatment. Studies show that pathologic features such as histological subtype, grade, tumor size and location, presence of perineural invasion (PNI), lymphatic vessel invasion (LVI), and blood vessel invasion (BVI) are prognostic factors.<sup>4,5</sup> When included in pathology reports, these features assist the clinician with a better understanding of the tumor's behavior. Guidelines for standardized surgical pathology reports are published in histopathology textbooks,<sup>6</sup> but such proforma based reporting is not widely practiced in Yazd, Iran. These proformas are varied and some include numerous items. Therefore, this study has attempted to audit pathology reports according to a minimum data set from the Netherland Gastric Carcinoma Nationwide Guidelines, Version 1.0 (Table1).

## Materials and Methods

All cases of gastric cancer referred to the Shahid Ramezanzadeh Radiation Oncology Center in Yazd, Iran between September 2004 and March 2011 that underwent curative surgery (total or subtotal gastrectomy) for which a copy of the pathology report was available were selected for this study. The presence or absence of the above mentioned information in these reports were recorded, rechecked and subsequently analyzed by SPSS-15 software.

## Results

Gastric cancer resections are performed in five hospitals in Yazd. There are four pathologists, all assistant professors, who work in one hospital affiliated with the medical state university in Yazd, Shahid Sadoughi Medical University. Two pathologists are employed in another government

hospital which is a member of the social security system. The remaining three hospitals are private hospitals; each hospital employs only one pathologist. One of these three pathologists also cooperates with the university medical center.

There were a total of 56 pathology reports from these hospitals in the medical records of patients who were referred to our center from September 2004 until March 2011. In all cases surgery was performed with a curative intent. Histology subtypes were divided according to the Lauren Classification into diffuse and intestinal subtypes. This classification was not reported in 80.4% of cases. The lack of recording of the Lauren Classification in gastric resections was partly a result of the frequent use of the terms "signet cell" or "signet ring" carcinoma. Grade was not reported in 16.1% of cases. T stage was not reported in 8.9% and N stage in 26.8% of cases. The mean total number of resected LNs was 5.1. Distance between tumor and nearest margin was not reported in 57.1% of cases. Tumor size was not reported in 10.7% and location in 41.1% of the reports. As seen in Table 2, the following were not reported: PNI (64.5%),LVI (85.7%), and BVI (64.3%).

## Discussion

Adequate pathology reporting of resected gastric cancer specimens is essential for management of individual patients, for establishing the efficacy of new preoperative staging techniques, neoadjuvant and adjuvant treatment, cancer registration, and organization of cancer services.<sup>5,6</sup> This has been the most important concern in this audit. Unfortunately none of the reports contained all of the items of interest.

As seen in Table 1 some of the items are mandatory, amongst which T and N stage, margin and grade are the more important items for determining post-operative adjuvant treatment. Only 32% of reports included all four items. Without adequate knowledge of these criteria, either under- or overtreatment may occur. Considering the side effects of radiotherapy and chemotherapy, in addition to the controversies

**Table 1.** Minimum data set from the Netherlands Gastric Carcinoma Nationwide Guideline, version 1.0**At a minimum, the pathology report should contain the following information:**

- histological type of the tumor
- histological grade of the tumor
- invasion depth (T stage), see Appendix TNM
- distance between the tumor and the nearest resection margin; completeness of resection
- number of excised and affected lymph nodes (N stage)
- size of the tumor
- localization of the tumor

**Optional information:**

- perineural invasion
- lymphatic invasion
- vascular invasion
- macroscopic description of the tumor

surrounding their effectiveness, it is crucial that reports contain the above mentioned criteria to avoid either over or undertreating patients. In addition to oncologists, other clinical staff such as surgeons and general physicians may need to interpret cancer pathology reports; these reports should therefore be readily comprehensible.<sup>7</sup> According to the 7<sup>th</sup> edition of the TNM Staging Classification for carcinoma of the stomach, at least 15 LNs must be surgically resected and evaluated by a pathologist. Unfortunately only two reports (3.5%) in our study had sufficient LNs. We cannot understand inadequacy of resected LNs because of insufficient surgical resection or not enough searching of pathologist for finding LNs. A study performed by Bouvier et al.<sup>8</sup> has shown that the number of examined LNs was lower in partial gastrectomies than in total gastrectomies; in cancers limited to one site compared to cancers that affected two subsites; in cancers of the lower third of the stomach compared to cancers of the middle or upper third; in T1/T2 cancers rather than in more extended cases; and in cancers smaller than 3 cm. Gender and age did not significantly influence the number of resected nodes.

Half of our patients underwent total gastrectomies; 25% of these were located in the upper two-thirds, 60.7% were larger than 3 cm, and 55.4% were stages T3/T4. However in only two reports were there adequate LN resections.

Some researchers believe that extensive lym-

phadenectomy increases survival, and information on the type of lymphadenectomy is important. In a similar study by King et al.<sup>5</sup> in the UK, 4 gastric cancer reports out of 56 were less than 50% complete. There were 14 gastric reports that were more than 75% complete, however no report was 100% complete. In a study in Wales by Burroughs et al.<sup>7</sup> specimen length, tumor type, depth of invasion, and presence or absence of LN involvement were recorded in the vast majority of cases (>95%). The minimum standards were attained in only 77% of gastric resections. In another study, Qureshi et al.<sup>9</sup> determined that a large proportion of responding pathologists (40%) indicated that their goal for LN assessment was 10–15 nodes per gastric cancer specimen, whereas 49% reported actually assessing 5–10 nodes. This study has shown that even pathologists in developed countries need to be reminded of the “guidelines”. Since negative margins are crucial for treatment and a minimum of a 5 cm safe margin is mandatory, pathologists must report the nearest distance between the tumor and resected edge. However, in our reviewed cases, 57.1% did not report distance between the tumor and resected edge. Of note, this rate was much worse for the three optional items (PNI, LVI, and BVI).

It has been proposed that pathologists use standard performa for reporting gastric cancer specimens Their participation in refresher courses could update their information in this regard.

**Table 2.** Percentage of items not reported in pathology reports.

Item	Not reported
Lauren Classification	80.40%
T stage	8.90%
N stage	26.80%
Margin	57.10%
Tumor size	10.70%
Tumor location	41.40%
PNI	64.30%
LVI	85.70%
BVI	64.30%

## References

- DeVita VT, Lawrence TS, Rosenberg SA. Devita, Hellman & Rosenberg's cancer: Principles & practice of oncology 8<sup>th</sup> ed. Pisters PWT, Kelsen DP, Tepper JE. *Lippincott Williams & Wilkins*; 2008.1050 p
- Parkin DM, Bray F, Ferlay J, Pisani P. Global cancer statistics, 2002. *CA Cancer J Clin* 2005; 55:74-108.
- Mehrabian AA, Esna-Ashari F, Zham H, Hadizadeh M, Bohlooli M, Khayamzadeh M, et al. Gastric cancer prevalence, according to survival data in Iran (National Study-2007). *Iranian J Publ Health* 2010; 39(3):27-31
- Scartozzi M, Galizia E, Verdecchia L, Berardi R, Graziano F, Catalano V, et al. Lymphatic, blood vessel and perineural invasion identifies early-stage high-risk radically resected gastric cancer patients. *Br J Cancer* 2006; 95:445-9.
- 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;57:702-5
- Rosai J. Guidelines for handling of most common and important surgical specimens. In: Rosai and Ackerman's surgical pathology, 9th ed. US: *Mosby*, 2004; 2:2898-9.
- Burroughs SH, Biffin AHB, Pye JK, Williams GT. Oesophageal and gastric cancer pathology reporting: A regional audit. *J Clin Pathol* 1999;52:435-9.
- Bouvier AM, Haas O, Piard F, Roignot P, Bonithon-Kopp C, Faivre J. How many nodes must be examined to accurately stage gastric carcinomas? *Cancer* 2002;94:2862-6.
- Qureshi AP, Ottensmeyer CA, Mahar AL, Chetty R, Pollett A, Wright FC, et al. Quality indicators for gastric cancer surgery: A survey of practicing pathologists in Ontario. *Ann Surg Oncol* 2009;16:1883-9.