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Appropriateness of multidisciplinary treatment related to the adequacy evaluation of gastric cancer from the surgeon's point of view: a retrospective cohort study

Ba Ool Seong, Seul-Gi Oh, Chang Seok Ko, Sa-Hong Min, Chung Sik Gong, In-Seob Lee, Beom Su Kim, Jeong Hwan Yook, Moon-Won Yoo

Division of Gastrointestinal Surgery, Department of General Surgery, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea

Purpose: Multidisciplinary treatment (MDT) in gastric cancer is an effective approach for establishing treatment plans. However, the appropriateness of using "ratio of MDT" as an item for evaluating the adequacy of gastric cancer treatment in Korea has not been previously researched. The purpose of this study is to verify whether the "ratio of MDT" is appropriate as an item for gastric cancer adequacy evaluation from the surgeon's perspective.
Methods: This study involved 142 patients who received MDT at our hospital between December 2015 and January 2023. Patients were divided into 2 groups based on the date when gastric cancer adequacy evaluation was implemented; there were 71 patients before and after the evaluation was conducted, respectively. Based on electronic medical records, the initial plan prepared before the MDT clinic and the final plan prepared after the clinic were compared to determine whether the plan was changed.
Results: The average age of patients who received MDT before and after the evaluation was 64.8 and 62.2 years, respectively. Overall, 50 and 21 patients were male (70.4%) and female (29.6%), respectively, in both groups. Before the evaluation, 26 patients (36.6%) who received MDT changed their treatment plans after visiting the clinic, and 15 patients (21.1%) who received MDT after the evaluation had their treatment plans modified. Groups who received MDT and changes in treatment plans were significantly correlated (P = 0.042).
Conclusion: Our findings suggest that including the "ratio of MDT" as an item of gastric cancer adequacy evaluation needs reassessment.
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Key Words: Health insurance, Patient care team, Policy, Stomach neoplasms

INTRODUCTION

Multidisciplinary treatment (MDT) is known as an effective way to provide appropriate treatment to patients with various types of cancer and is actively being implemented [1-3]. In gastric cancer treatment, MDT has also been accepted as an effective strategy for establishing treatment plans [4-6]. According to Korean Practice Guidelines for Gastric Cancer 2022, the advantages of MDT may include correct diagnosis, change into a better treatment plan, shorter decision-making time, and survival benefits [7]. In Korea, the Health Insurance Review & Assessment Service (HIRA), a national medical evaluation

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Corresponding Author: Moon-Won Yoo
Division of Gastrointestinal Surgery, Department of General Surgery, Asan Medical Center, University of Ulsan College of Medicine, 88 Olympic-ro 43-gil, Songpa-gu, Seoul 05505, Korea
Tel: +82-2-3010-3484, **Fax:** +82-2-3010-6701
E-mail: yoo.moon-won@amc.seoul.kr
ORCID: https://orcid.org/0000-0003-0346-9042

agency under the Ministry of Health and Welfare, examines and evaluates medical expenses for services. This institution also evaluates and certifies hospitals' medical capabilities for diseases by assigning grades through an adequacy evaluation of various diseases. Similarly, gastric cancer adequacy evaluations are performed and graded for each hospital. The evaluation criteria include 12 "common indicators" and 3 "specific indicators for each cancer." In the initial gastric cancer adequacy evaluation conducted from 2014 to 2019, the ratio of MDT involvement was not an evaluation item. However, it was introduced as an evaluation item in the second period of gastric cancer adequacy evaluations starting from July 2022, with the proportion of appropriate MDT patients suggested as 7.6% of all gastric cancer patients. The ratio of MDT is included in the 12 items of the "common indicator"; therefore, the number of patients conducting MDT in each hospital is increasing. While the advantages of MDT are apparent, it is also a practical challenge for each hospital to allocate resources such as manpower, time, and space to maintain MDT [8]. Additionally, no guidelines are available such as patient selection criteria for efficient MDT, and limited research is available in this area [7]; therefore, considering whether it is appropriate for the ratio of MDT to be included in the gastric cancer adequacy evaluation item is necessary. The appropriateness of using the ratio of MDT as an item for evaluating the adequacy of gastric cancer treatment has no prior research. Therefore, the purpose of this study is to evaluate whether MDT is appropriate as an item for gastric cancer adequacy evaluation by comparing the ratio of MDT between the 2 periods.

METHODS

This study was reviewed and approved by the Institutional Review Board of Asan Medical Center in Seoul, Korea (No.2024-0125). It was conducted according to the Declaration of Helsinki and written informed consent was waived due to its retrospective nature.

This study encompassed 142 patients who received MDT from a surgeon at Asan Medical Center between December 2015 and January 2023. Patients were allocated into 2 groups based on July 2022, the onset of the second period for gastric cancer adequacy evaluation, wherein the MDT ratio was introduced as a new evaluative criterion. During the first period, from December 2015 to June 2022, 71 patients received MDT, and an equivalent number were treated in the second period, from July 2022 to January 2023. Four specialists in surgery, gastroenterology, medical oncology, and radiology contributed to the MDT clinic. Before the MDT clinic commenced, a designated surgeon preliminarily reviewed patient information and documented an initial plan in the electronic medical record; this plan was later revised post-MDT clinic. The initial and final plans were assessed to determine any alterations. The average age, sex, and clinical TNM stage of patients in each group were analyzed to ascertain any disparities. Additionally, the rate of change in treatment plans before and after the MDT was calculated for each group, employing a P-value to evaluate the statistical significance of differences in change rates ($P < 0.05$). Statistical analysis was performed using IBM SPSS Statistics ver. 21.0 (IBM Corp.) with a chi-square test.

RESULTS

From December 2015 to January 2023, a total of 142 patients underwent MDT with a designated surgeon's participation. Overall, 71 patients were included in each of the 2 groups: group 1 received MDT before July 2022, coinciding with the start of the second period of gastric cancer adequacy evaluation, and group 2 received MDT thereafter. The average age was 64.8 (±11.07) and 62.2 (±12.52) years for groups 1 and 2, respectively. In both groups, of the 71 patients, 50 were male (70.4%) and 21 were female (29.6%). The clinical stage of group 2 MDT patients was lower than that of group 1, although the difference was not statistically significant. Similarly, no statistically significant differences were noted in TNM stage, sex, or age between the 2 groups (Table 1). In group 1, 26 patients (36.6%) altered their

Table 1. Demographics of MDT patients of each group

Characteristic	Group 1 (1st period)	Group 2 (2nd period)	P-value
Sex			>0.999
Male	50 (70.4)	50 (70.4)	
Female	21 (29.6)	21 (29.6)	
Age (yr)	64.8 ± 11.07	62.2 ± 12.52	0.339
Clinical stage[a]			
T stage			0.212
T1a	10 (19.6)	19 (39.6)	
T1b	8 (15.7)	8 (16.7)	
T2	4 (7.8)	5 (10.4)	
T3	12 (23.5)	9 (18.7)	
T4a	15 (29.4)	5 (10.4)	
T4b	2 (3.9)	2 (4.2)	
N stage			0.066
N0	22 (43.1)	33 (68.7)	
N1	21 (41.2)	11 (22.9)	
N2	4 (7.8)	3 (6.3)	
N3	4 (7.8)	1 (2.1)	
M stage			0.064
M0	37 (72.5)	42 (87.5)	
M1	14 (27.5)	6 (12.5)	

Values are presented as number (%) or mean ± standard deviation.
MDT, multidisciplinary treatment.
[a]The classification of gastric cancer TNM staging, American Joint Committee on Cancer (AJCC) 8th edition.

Table 2. Percentage and significance of plan change between groups

Plan change	1st period (n = 71)	2nd period (n = 71)	P-value
Not changed	45 (63.4)	56 (78.9)	0.042
Changed	26 (36.6)	15 (21.1)	

Values are presented as number (%).

Table 3. Details and proportions of the treatment plan changed through MDT

Details of change	1st period (n = 26)	2nd period (n = 15)
ESD → surgery	5 (19.2)	4 (26.7)
Surgery → ESD	1 (3.8)	2 (13.3)
Intervention[a] → follow-up	5 (19.2)	1 (6.7)
Follow-up → intervention	1 (3.8)	1 (6.7)
Chemotherapy → intervention	1 (3.8)	1 (6.7)
Intervention → further evaluation	8 (30.8)	4 (26.7)
Chemotherapy → further evaluation	4 (15.4)	2 (13.3)
Neoadjuvant chemotherapy → palliative chemotherapy	1 (3.8)	0 (0)

Values are presented as number (%).
MDT, multidisciplinary treatment; ESD, endoscopic submucosal dissection.
[a]Intervention includes biopsy, endoscopic procedures, and surgery.

treatment plans post-MDT, compared to 15 patients (21.1%) in group 2. There was a statistically significant correlation between the MDT received and changes in treatment plans (P = 0.042) (Table 2). The number of patients changing their treatment plans post-MDT in the second period decreased from 26 to 15, with a notably higher rate of change between endoscopic submucosal dissection and surgery (Table 3).

DISCUSSION

MDT, represented as team decision-making, and the establishment of an MDT in oncology have significantly influenced clinical decision-making [1,9,10]. The composition of departments and experts in the MDT can vary. In gastric cancer, the MDT may include a range of professionals such as nutritionists, nurses, social workers, palliative care experts, surgeons, gastroenterologists, medical oncologists, radiologists, pathologists, and nuclear medicine specialists [11-13]. Gastric cancer usually has a standard treatment approach for typical cases, and not all cases need a multidisciplinary approach [8]. However, certain patients require multidisciplinary care [14,15]. Given the rapid development and the latest knowledge in each field related to the treatment of gastric cancer, establishing a patient treatment plan through an MDT in the same space and at the same time will provide optimal care. Moreover, the emotional impact on patients and guardians observing the consultation and decision-making process by experts in various fields should also be considered a positive factor.

As mentioned earlier, the HIRA, operating under the Ministry of Health and Welfare of Korea, conducts regular adequacy evaluations to evaluate the quality of treatment for various diseases. The first gastric cancer adequacy evaluation in the first period was launched in 2014, with subsequent evaluations continuing through 2019. The focus during the first period was primarily on the treatment processes for surgical patients, which inherently limited the scope of evaluation for metastatic cancer patients who were not candidates for surgery. Moreover, the evolving landscape of medical treatments and changes in the medical environment necessitated a revision of the evaluation metrics to better align with patient needs. Consequently, the first gastric cancer adequacy evaluation for the second period was initiated in July 2022. In this context, the "ratio of MDT" item was newly introduced.

MDT offers a distinct advantage by enabling the optimal treatment strategy through a comprehensive assessment of a patient's condition. This approach was also referenced in the Korean Practice Guidelines for Gastric Cancer 2022. Nevertheless, the absence of patient selection criteria and specific guidelines for MDT types poses risks, such as potential resource wastage and delays in urgent care for patients requiring MDT [7,8].

According to the results of this study, 71 patients received MDT from December 2015 to June 2022. This first period did not incorporate a "ratio of MDT" as an item in the gastric cancer adequacy evaluation. Among these patients, 26 patients (36.6%) underwent a change in their treatment plan. In the subsequent period from July 2022 to January 2023, another group of 71 patients received MDT, this time with the inclusion of an MDT ratio in the assessment. In this group, 15 patients (21.1%) experienced changes in their treatment plans. To summarize, the number of patients who received MDT in the second period increased enormously, yet the rate of treatment plan modifications decreased from 36.6% to 21.1%. While it is challenging to gauge the efficacy of MDT based solely on the factor of treatment plan changes, the findings prompt a reconsideration of whether the introduction of an MDT ratio truly ensures that the most suitable patients are receiving MDT in the context of gastric cancer adequacy evaluation.

This study has several limitations. First, the MDT conducted by a single surgeon at a single center was examined, and no specific quantitative assessment of the hospital resources was required to support the MDT system. Additionally, the efficiency of the MDT was evaluated using only one metric; whether treatment was altered. However, given the absence of appropriate selection criteria for patients requiring MDT,

this study is significant as it is the first, to our knowledge, to investigate whether including the ratio of MDT is suitable as a measure of adequacy for gastric cancer evaluation. If detailed research into the human and material resources needed by hospitals to sustain MDT is performed, more comprehensive outcomes will be derived beyond this study's results.

In conclusion, in the absence of a guideline for patient selection that necessitates MDT and a lack of specific assessment of the resources used to maintain MDT, the inclusion of the MDT ratio as a measure of gastric cancer adequacy evaluation needs reassessment.

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Conflict of Interest
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ORCID iD
Ba Ool Seong: https://orcid.org/0009-0000-1202-8471
Seul-Gi Oh: https://orcid.org/0000-0001-6920-2805
Chang Seok Ko: https://orcid.org/0000-0002-4155-4312
Sa-Hong Min: https://orcid.org/0000-0002-6150-7935
Chung Sik Gong: https://orcid.org/0000-0002-5116-609X
In-Seob Lee: https://orcid.org/0000-0003-3099-0140
Beom Su Kim: https://orcid.org/0000-0002-3656-2086
Jeong Hwan Yook: https://orcid.org/0000-0002-7987-5808
Moon-Won Yoo: https://orcid.org/0000-0003-0346-9042

Author Contribution
Conceptualization: MWY
Data curation: JHY, MWY, BSK, ISL, CSG, SGO
Formal analysis: SHM, CSK
Investigation: BOS, MWY
Writing – Original Draft: BOS, SGO
Writing – Review & Editing: BOS, MWY

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