Experiences of multidisciplinary gastric cancer treatment at the National Cancer Center, Korea

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Multidisciplinary treatment (MDT) is considered to be beneficial for patients undergoing complex treatments for cancer. The efforts of MDT led to the initiation of nowadays well known trials in gastroesophageal cancer treatment. Here we report the experience of MDT of the Center for Gastric Cancer of the National Cancer Center, Korea. We show the management not only of oncologic treatment plans but also treatment decisions on perioperative oncologic therapy and multimodal management of postoperative and various treatment-related complications. Six cases from gastroenterology, hemato-oncology and surgery parts were presented to show function and effect of MDT conference. Those examples typically showed that even final pathological diagnosis was changed after MDT conference for some cases, gives adequate decision for further treatment after complications, and offered optimal treatment decision for difficult metastatic disease. Also, management of complications are now more effectively resolved with multidisciplinary intervention with close communication. The local MDT conference can be considered as a fast and effective tool for adequate treatment and improving quality of the treatment. Therefore MDT is an essential component of cancer care to improve patient’s outcome.

Keywords: Multidisciplinary treatment, Gastric cancer

INTRODUCTION

Multidisciplinary treatment (MDT) is considered to be beneficial for patients undergoing complex treatments for cancer. However treatment modalities for malignant diseases have become more and more sophisticated over the recent decade. Multiple prospectively randomized controlled trials have shown benefits not only for perioperative but also for non curative treatment modalities [1]. Thus a single specialist on whichever disease is no more able to know and perform all treatments considered to be beneficial for the respective patient. A team approach consisting of multiple specialists is supposed to improve patient’s outcome and prognosis after the treatment [2]. Those teams may improve communication coordination and decision making according to the recent literature and data available. Often time consuming referral to other colleagues may prolong necessary treatment and thus may influence the patients’ outcome. Several analyses on the outcomes of MDT have been published before. It was shown that MDT may lead to revised treatment plans with improved adherence to evidence-based guidelines [3-8]. Further it was demonstrated in the literature that MDT may reduce time from diagnosis to initiation of appropriate treatments. Not only patients but also health care specialists thus endorse those effective decision making processes. Besides higher patient’ satisfaction, MDT was reported to improve education of clinicians and increase inclusion rates to prospectively randomized controlled trials [3,9-11].

The efforts of MDT led to the initiation of nowadays well known trials in gastroesophageal cancer treatment [12-16]. Those trials changed the management of advanced stage gastric cancers and improved patient’s outcome throughout the world. However it was published before that a considerable amount of patients being eligible for multimodal treatment concepts have not been considered for such a therapeutic option [17,18]. Even among experts there is...
disparity in clinical management of certain situations. This was shown in a recent publication reporting on the results of a highly specialized panel of experts in gastric cancer treatment [1]. The major reason for this was considered to be the lack of evidence and also the drawbacks of clinical staging with the well known uncertainties to define clinical T- and N-stages. In contrast MDT meetings have shown to improve staging accuracy [19]. Compared to US and European countries, MDT is not mandatory in Korea so far. However, the importance of MDT has been recognized and efforts are being undertaken throughout the country in order to offer the benefits of MDT to local patients. In contrast to European countries the general practitioners system is not very common in Korea and patients usually report directly to the hospital where their treatment has taken place before. The National Cancer Center, Korea (NCCK) is one of the first institutions introducing MDT and implemented even for organizing administrative system. Here we report the experience of MDT of the Center for Gastric Cancer of NCCK. We show the management not only of oncologic treatment plans but also treatment decisions on perioperative oncologic therapy and multimodal management of postoperative and various treatment-related complications.

CASE PRESENTATIONS

Case 1. A case from gastroenterology to discuss endoscopic treatment
A 79-year-old man was diagnosed as one early gastric cancer on mid-body posterior wall and one high-grade adenoma at just proximal area to the main lesion in the esophagagogastroduodenoscopy (EGD). The long diameter was 1.5 cm and 1.2 cm respectively, and endoscopic submucosal dissection (ESD) was performed for the two lesions without any complication. However, the pathological report revealed a 4.5 cm sized lesion invaded submucosal layer, and proximal margin was less than 1 mm. In the multidisciplinary conference, the endoscopist argued that lesions were not single, but double, and requested pathological reexamination. Also, participants discussed next plan for each cases. If he had a single large submucosal lesion, it was out of expanded criteria of ESD and additional surgery was needed. However, if it was proved to be less than 3 cm-sized double lesions, they were included in the expanded criteria of ESD, and close observation can be available. After multidisciplinary conference, the pathologist reexamined his specimen and diagnosed as two early gastric cancers.

Case 2. A case from gastroenterology to discuss further treatment plan of complications of endoscopic treatment
A 56-year-old man underwent ESD for 2.5 cm sized adenoma on antrum greater curvature of stomach. He had neither underlying disease nor gastrointestinal symptom, and ESD procedure was completely performed. However, Mallory-Weiss tearing was developed due to patient’s frequent belching and full-thickness laceration was observed. Immediately endoscopic clipping was performed for the laceration and bleeding was controlled by electrocoagulation. Chest X-ray showed large amount of free air under the diaphragm, and small amount of high-attenuated fluid suggesting hematoma was defined in the computed tomography (CT). In the multidisciplinary conference, participants discussed whether further surgery was needed or not. After checking the patient’s vital sign, symptom, and laboratory finding, surgeons replied that close observation with antibiotics was preferred rather than additional surgery. After fasting for 7 days, the patient started diet and discharged without any complication.

Case 3. A case from medical oncology to discuss operability after palliative chemotherapy
A 48-year-old man was diagnosed as advanced gastric cancer with liver metastasis in September 2009. From October 2009 to November 2011, he received 28 cycles of chemotherapy (TS-1 and oxaliplatin), and second line of chemotherapy (Docetaxel and Cisplatin, DP) was started in February 2012. Totally, 14 cycles of second line chemotherapy was performed until January 2013. After the 14th cycle of DP, EGD showed complete remission status and unchanged advanced gastric cancer with a suprapancreatic metastatic lymph node was found in abdominal CT. There was no evidence of liver metastasis. In the multidisciplinary conference, participant discussed the patient’s operability, and surgeons recommended radical operation. After operation, pathological report showed yp T2N0, and the patient received additional chemotherapy.

Case 4. A case from medical oncology to discuss further treatment plan of complications after chemotherapy
A 40-year-old woman underwent subtotal gastrectomy for advanced gastric cancer (pT4aN3a) in February 2012. From March 2012 to April 2013, the patient received adjuvant chemotherapy with TS-1 and cisplatin. In July 2013, she complained of abdominal pain, and CT showed A-loop syndrome due to recurrent mass. Endoscopic stent insertion was planned and successfully performed. However, diffuse retroperitoneal air, bilateral pneumothorax, and subcutaneous emphysema were observed in the chest X-ray and CT. In the multidisciplinary conference, the next plan was discussed by participants. After confirming stable vital sign and unremarkable symptom and laboratory finding, participants recommended close observation with antibiotics. The patient was treated with chest tube for pneumothorax and abdominal pain was subsided as time
went by. After gas passage, she started diet and discharged uneventfully.

**Case 5. A case from surgery to discuss treatment plan of double lesion**

A 81-year-old man was diagnosed as double gastric lesions: one was 2.5 cm sized advanced gastric cancer on angle posterior wall, and the other was 2 cm sized adenoma on cardia lesser curvature of stomach. Previously, he underwent percutaneous catheter insertion due to myocardial infarction in 2004, and current single photon emission computed tomography (SPECT) showed partially reversible perfusion defect. In the multidisciplinary, the order of treatment and treatment methods were discussed. If the adenoma was treated by ESD, subtotal gastrectomy for advanced gastric cancer could be available. Conversely, total gastrectomy can be considered as one-step treatment. Moreover, cardiac evaluation and stent insertion with anticoagulation in case of necessity should be stated. After discussing, participants recommended ESD for adenoma following by cardiac evaluation. When coronary arteriography demonstrates tolerability of operation, minimal invasive surgery can be performed for advanced gastric cancer.

**Case 6. A case from surgery to discuss further treatment plan of postoperative complications**

A 58-year-old woman underwent robot-assisted total gastrectomy for early gastric cancer (pT1bN0). On postoperative day 2, abdominal pain with high fever was presented, and abdominal CT revealed postoperative small bowel ileus at proximal E-loop and A-loop probably due to jejunojejunal anastomosis stricture. Percutaneous jejunostomy was inserted at the dilated A-loop and conservative management was performed. On postoperative day 7, EGD found leakage on esophagojejunal anastomosis and circular stenosis at 70 cm from upper incisor. In the multidisciplinary conference, the surgeon asked endoscopists way of solution for the stenosis. Endoscopists recommended conservative management and regular follow-up with EGD. Because balloon dilatation was risky due to active ulcer with inflammation, and endoscopic stent was inappropriate for benign ulcer because of difficulty in removal. The leakage on esophagojejunal anosmosis and jejunal stenosis was improved in follow-up EGD on poastoperative day 22.

**DISCUSSION**

Despite the huge efforts undertaken, there is no strong evidence that MDT improves patients’ overall survival [5]. However it was revealed that MDT led to improved survival rates of breast cancer patients in Scotland [20]. Due to those findings MDT has become mandatory for breast cancer treatment in Germany [21]. Further it has become a mandatory prerequisite in order to become a certified comprehensive cancer center in several other countries [7,22–26]. Many national guidelines incorporated MDT modalities over the recent years [2,27–30]. Most of the guidelines suggest that a MDT team consists of representatives from surgery, medical oncology, radiation oncology, pathology and radiology. Further it is recommended to extend the team to nurses, dietitians, psycho-oncologists and trial specialists, who attend the frequent meetings. Despite common acceptance of MDT meetings, still many obstacles exist throughout the general practice. Those obstacles are mainly related to the workload in specialized treatment centers with consecutive lack of time as much as funding and reimbursement [2]. The key factors were poor staff attendance, scarcity of monetary and administrative support, ineffective recording and sometimes hierarchical boundaries [31]. It was reported that due to those barriers, treatment plans were not communicated to the general practitioners referring the patient. Therefore several requirements have to be met in order to establish MDT meetings. In a study from UK [29] the following requirements were outlined: appropriate infrastructure, meeting schedules, logistics and adherence to patient centered decisions. An Australian survey defined the following items in order to make MDT an effective tool: good leadership, core membership, team dynamics, administrative support, sufficient communication, adherence to guidelines and standards, appropriate recording, involvement of supporting stuff, protected time, adequate infrastructure, patient involvement, institutional funding and auditing of clinical activities. Especially leadership is supposed to play an important role [2,29,31]. Therefore an MDT leader is not only supposed to be a respected person (personally and scientifically) but also trained in communication, managing and listening skills. Further equality of the core team members is considered of utmost importance in order to avoid ineffective decision making. Another central issue should be so called “protected time” not only for the meeting itself but also for the preparation in order to obtain the relevant information for the respective patients [28,32].

The MDT conference at the Center for Gastric Cancer of NCCK was established when the hospital opened in 2001. Since then regular weekly meetings take place incorporating surgeons, gastroenterologists, medical oncologists, radiologists and specialized nurses (patient care, research and trials). Each case is presented according to treatment schedules and admission status. Out- and in-patients are discussed according to their respective diagnosis. All treatment decisions are taken in concordance with all MDT members. Due to its consistent character, MDT at NCCK fulfills the demands and requirements stated before. Protected time is warranted as much as appropriate infrastructure. All members are aware of their role within the
team so that treatment decisions can be considered consistent. Further there is a strong adherence to national and international guidelines which is supported by the fact that all MDT members are exclusively specialized in gastric cancer treatment. Regular training is warranted by reviews of the recent literature shared between the team members. The described cases reveal that MDT does not only play a role in oncologic issues but also on perioperative problems. The case presentations reveal that treatment decisions are based on guidelines as recommended. Further on, review of postoperative findings led to changes in pathology reporting and treatment planning. This is consistent with reports that MDT not only may improve staging accuracy but also management of the therapeutic concept [2,19]. Review of postendoscopic and postoperative complications helped to avoid unnecessary and potentially harmful treatments such as redo-surgery. By active discussion among the members, difficult disease states such as conversion surgery were consented even without available guidelines on an individual basis. Recurrence cases were adequately scheduled for further treatment. Review of ongoing trials led to a high inclusion rate into prospectively randomized controlled studies. Further more specific clinical situations without available guidelines gave rise to study ideas and protocol development.

The local MDT conference can be considered as a fast and effective tool for adequate treatment and improving quality of the treatment. Therefore MDT is an essential component of cancer care to improve patient’s outcome. Further research on effectiveness of MDT and creation of objective data and evidence is needed to promote approval of insurance reimbursement in order to establish comprehensive cancer centers in Korea. Further, prospective and continuous evaluation of the patients treated within a MDT setting is going to provide improvements in outcome for gastric cancer.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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