SOX Chemotherapy is Effective Treatment for Gastric Cancer with Liver Metastases: A Case Report

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Case report

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Abstract

Background: Gastric cancer is a malignant tumor of global significance. Many patients have been shown to have advanced gastric cancer (AGC) with liver metastases, and thus are not surgical candidates. However, there is not report about hepatic metastasis disappearing.

Case presentation: Herein we report a patient of AGC with liver metastases who received SOX (tegafur gimeracil, oteracil, and oxaliplatin) chemotherapy and the liver metastases regressed.

Conclusions: SOX is effective in the treatment of AGC.

Background

Gastric cancer ranks third as a malignant tumor in men and fifth in women worldwide[1]. Gastric cancer has a high incidence and mortality rate in eastern Asia [2]. The incidence of gastric cancer ranks third among cancers in China [3]. Late stage gastric cancer is the main reason Chinese patients are not surgical candidates [4]. The present case involves a 66-year-old male patient who was diagnosed with gastric adenocarcinoma and liver metastases. After therapy with SOX (tegafur gimeracil, oteracil, and oxaliplatin), the liver metastases regressed and the patient was suitable for surgery.

Case Presentation

The patient sought evaluation in the Oncology Department for a gastric cancer of 1-month duration. The pathology of the gastroscopic biopsy showed an adenocarcinoma and immunohistochemistry (IHC) was significant for Her-2(++) and Ki-67(+50%). Enhanced magnetic resonance imaging (EMRI) revealed a gastric tumor with metastases to the tumor (Figure 1). Therefore, a diagnosis of gastric adenocarcinoma with liver metastases (cTxNxM1) was made. Laboratory testing was normal, except the CA19-9 was > 700 U/ml. Fluorescence *in situ* hybridization (FISH) revealed a HER2/CEP17 = 1.05; there was no amplification. There was no contraindication for chemotherapy therefore a therapy of SOX (tegafur gimeracil and oteracil potassium capsules, TS-1: 60 mg d 1-14 bid po; and oxaliplatin, L-OHP: 200 mg d 1 ivgtt, Q21d). During chemotherapy, the patient was administered hepatoprotectives and symptomatic treatment. In the third chemotherapy session, the CA19-9 level was 208 U/ml and EMRI revealed a small liver metastatic lesion (Figure 2). During the present chemotherapy session, because of myelosuppression, a single-drug chemotherapy regimen of TS-1 was performed. In the fourth chemotherapy session with SOX (tegafur gimeracil and oteracil potassium capsules, TS-1: 40 mg d 1-14 bid po; and oxaliplatin, L-OHP: 200 mg d 1 ivgtt, Q21d), the CA19-9 level was normal. In the fifth chemotherapy session, a single-drug chemotherapy regimen of TS-1 (40 mg) was performed. In the sixth chemotherapy session with SOX (tegafur gimeracil and oteracil potassium capsules, TS-1: 40 mg d 1-14 bid po; and oxaliplatin, L-OHP: 200 mg d 1 ivgtt, Q21d) was performed. During the seventh chemotherapy session, due to poor liver function and myelosuppression, chemotherapy was not performed. EMRI (Figure 3) and color ultrasound showed few liver metastases and the patient was

transferred to general surgery for a laparoscopic radical gastrectomy. The pathology of the tissue specimen revealed poorly differentiated adenocarcinoma, Lauren type (intestine). IHC revealed the following: CD 10 (-); HEPA (-); CK (+); Ki67 (80% +); EGFR (++) ; HER2 (0); PGP (++) ; CD 44V6 (++) ; and TOPO II α (++) . Post-operatively, the patient received SOX chemotherapy 2 times and there were no recurrences in the ensuing 5 months.

Discussion And Conclusions

Gastric cancer includes early gastric cancer and advanced gastric cancer (AGC). Many patients are shown to have a late stage of AGC at the time of diagnosis, and thus are not surgical candidates. Systemic chemotherapy is usually the treatment of choice for AGCs. A combination of fluorouracil and platinum is now the first-line treatment for AGC, which is often based on the expression of human epidermal growth factor receptor 2 (HER2) [4]. In HER2-positive cases, trastuzumab plus chemotherapy is thought to be an effective therapy strategy for AGC [5].

S-1 is an oral anti-cancer medication which includes tegafur gimeracil and oteracil [6]; cisplatin plus S-1 is thought to be better for S-1 [7]. Currently, the SOX (S-1+oxaliplatin) chemotherapy project has been shown to have a therapeutic effect as first-line chemotherapy for AGC [6].

Some studies have reported that SOX chemotherapy treatment for gastric cancer with liver metastases is effective [8–11]; however, these studies have not clearly indicated that patients with gastric cancer and liver metastases could undergo radical, curative surgery for carcinoma of the stomach.

In the present case, the patient was diagnosed with gastric adenocarcinoma based on a gastroscopic biopsy and the IHC was significant for Her-2(++); however, FISH illustrated no amplification for the Her2 gene. Therefore, trastuzumab plus chemotherapy was not used and the SOX strategy was utilized for the patient. After the sixth chemotherapy session liver metastases were not detected on EMRI. Thus, SOX treatment was effective, after which the patient was suitable for surgery. A laparoscopic radical gastrectomy was then performed. The patient recovered without complication 5 months post-operatively.

CD44v6 is the first adhesive molecule of CD44 which showed the metastatic potential of human tumors [12]. PGP illustrates the invasive ability of gastric cancer [13]. CD 44V6 (++) and PGP (++) indicated metastases and invasion in the present patient. TOPO II α overexpression is related to the location of the tumor, depth of invasion, and TNM stage [14]. In the present patient, IHC of the pathologic specimen illustrated TOPO II α (++) , which was consistent with lymphatic metastases.

Conclusion

Although cancer-targeted drugs are more and more prevalent, the SOX chemotherapy regimen is a reasonable treatment strategy for AGC, and offers more possibilities for gastric cancer.

Abbreviations

AGC: advanced gastric cancer;

SOX chemotherapy: tegafur gimeracil, oteracil, and oxaliplatin;

IHC: immunohistochemistry;

EMRI: enhanced magnetic resonance imaging;

HER2: growth factor receptor 2;

Declarations

Ethics approval

The study has been approved by the Ethics Committee of The third people's hospital of Dalian; and the consent has been get from the patient.

Availability of data and materials

Data could be founded from the corresponding author.

Conflict of Interests

The authors declare that they have no competing interests.

Consent

Written informed consent was obtained from the patient for publication of this case report and the accompanying images.

Authors' contributions

JP performed the surgery; GL, JZ and PW collected the literature and wrote the manuscript; ZF constructed the structure and revised the manuscript.

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References

1. Han G, Shi J, Mi L, Li N, Shi H, Li C, et al. Clinical efficacy and safety of paclitaxel liposomes as first-line chemotherapy in advanced gastric cancer. *Future oncology*. 2019;15(14):1617-27.

2. Bando H, Yamada Y, Tanabe S, Nishikawa K, Gotoh M, Sugimoto N, et al. Efficacy and safety of S-1 and oxaliplatin combination therapy in elderly patients with advanced gastric cancer. *Gastric cancer : official journal of the International Gastric Cancer Association and the Japanese Gastric Cancer Association*. 2016;19(3):919-26.
3. Zhu X, Li J. Gastric carcinoma in China: Current status and future perspectives (Review). *Oncology letters*. 2010;1(3):407-12.
4. Yu S, Cai L, Lin F, Wu X, Zhang C, Liu X, et al. Durable Response After Combination Of Concurrent Chemoradiotherapy And Anti-PD-1 Therapy In HER2-Negative Advanced Gastric Adenocarcinoma: A Case Report. *OncoTargets and therapy*. 2019;12:7691-8.
5. Li Q, Lv M, Jiang H, Wang Y, Yu S, Li W, et al. A prospective observational study on the optimal maintenance strategy in HER2-positive advanced gastric cancer treated with trastuzumab-based therapy. *Journal of cancer research and clinical oncology*. 2019.
6. Yamada Y, Higuchi K, Nishikawa K, Gotoh M, Fuse N, Sugimoto N, et al. Phase III study comparing oxaliplatin plus S-1 with cisplatin plus S-1 in chemotherapy-naïve patients with advanced gastric cancer. *Annals of oncology : official journal of the European Society for Medical Oncology*. 2015;26(1):141-8.
7. Koizumi W, Narahara H, Hara T, Takagane A, Akiya T, Takagi M, et al. S-1 plus cisplatin versus S-1 alone for first-line treatment of advanced gastric cancer (SPIRITS trial): a phase III trial. *The Lancet Oncology*. 2008;9(3):215-21.
8. Bando H, Yamada Y, Tanabe S, Nishikawa K, Gotoh M, Sugimoto N, et al. Efficacy and safety of S-1 and oxaliplatin combination therapy in elderly patients with advanced gastric cancer. *Gastric Cancer Official Journal of the International Gastric Cancer Association & the Japanese Gastric Cancer Association*. 2016;19(3):919-26.
9. Boku N, Ryu MH, Kato K, Chung HC, Minashi K, Lee KW, et al. Safety and efficacy of nivolumab in combination with S-1/capecitabine plus oxaliplatin in patients with previously untreated, unresectable, advanced, or recurrent gastric/gastroesophageal junction cancer: interim results of a randomized, phase II trial (ATTRACTION-4). *Annals of oncology : official journal of the European Society for Medical Oncology*. 2019;30(2):250-8.
10. Li Z, Hou X, Chen J, Sun H, Mi Y, Sui Y, et al. Efficacy and safety of SOX chemotherapy with or without surgery in AFP-producing advanced gastric cancer. *Oncology letters*. 2017;14(1):579-86.
11. Yang H, Sui Y, Guo X, Tan X, Li Y, Wang M. Endostar continuous intravenous infusion combined with S-1 and oxaliplatin chemotherapy could be effective in treating liver metastasis from gastric cancer. *Journal of cancer research and therapeutics*. 2018;14(Supplement):S1148-S51.
12. Delektorskaya VV, Perevoshchikov AG, Golovkov DA, Kushlinskii NE. Expression of E-cadherin, beta-catenin, and CD-44v6 cell adhesion molecules in primary tumors and metastases of colorectal adenocarcinoma. *Bulletin of experimental biology and medicine*. 2005;139(6):706-10.
13. Chen JS, Wu BB, Bao HL, Du JM, Zhang SC, Zheng YH. Relationship between CIP2A expression, and prognosis and MDR-related proteins in patients with advanced gastric cancer. *International journal of*

clinical and experimental pathology. 2015;8(11):15007-12.

14. Zheng F, Zhao J, Du F, Zhao J, Shen G, Ma F, et al. Relationship between Topoisomerase II Alpha Overexpression and Prognosis in Chinese Gastric Cancer Patients. Journal of environmental pathology, toxicology and oncology : official organ of the International Society for Environmental Toxicology and Cancer. 2017;36(3):207-16.

Figures

Figure 1

Hepatic metastasis could be detected in the Enhanced magnetic resonance imaging.

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Hepatic metastasis could be detected in the Enhanced magnetic resonance imaging.

Figure 2

Hepatic metastasis could be seen smaller than that in the Figure 1 in the Enhanced magnetic resonance imaging.

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Figure 3

There was no clear liver metastases in the Enhanced magnetic resonance imaging.

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