



Exploring the clinical capabilities and limitations of ChatGPT: a cautionary tale for medical applications

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Dear Editor,

ChatGPT (Chat Generative Pretrained Transformer), is an artificial intelligence model developed by Open AI based on deep learning technology^[1,2]. It can simulate human natural

language processing ability, understand natural language, and generate language models. Since its release, ChatGPT has been widely popular and has been praised for passing the Turing test, passing a legal exam at the University of



How to choose postoperative adjuvant chemotherapy for colon cancer with pathological stage II



The choice of adjuvant chemotherapy regimen for colon cancer patients with pathological stage II can vary depending on various factors. Here are some commonly used chemotherapy regimens for this patient population:

1. 5-Fluorouracil (5-FU) monotherapy: 5-FU is a chemotherapy drug that has been commonly used for many years in the treatment of colon cancer. It can be administered as a bolus injection or as a continuous infusion over several days. While it has been shown to have modest survival benefit in stage III colon cancer, its role in stage II colon cancer is still somewhat controversial.
2. Capecitabine: Capecitabine is an oral chemotherapy drug that is similar to 5-FU but can be taken at home. Studies have shown that capecitabine is a reasonable alternative to 5-FU in patients with stage II colon cancer.
3. FOLFOX: FOLFOX is a combination chemotherapy regimen that includes 5-FU, oxaliplatin, and leucovorin. FOLFOX has been shown to have a survival benefit in stage III colon cancer and is sometimes used in stage II colon cancer patients with high-risk disease features.
4. CAPOX: CAPOX is a combination chemotherapy regimen that includes capecitabine and oxaliplatin. It is similar to FOLFOX but substitutes capecitabine for 5-FU. CAPOX has been shown to be equally effective as FOLFOX in stage III colon cancer patients and is sometimes used in stage II colon cancer patients with high-risk disease features.

Ultimately, the choice of adjuvant chemotherapy regimen should be made on a case-by-case basis, taking into account the individual patient's characteristics and preferences. It is important to discuss the potential benefits and risks of each chemotherapy regimen with the patient and involve them in the decision-making process.

Figure 1. The first time asked ChatGPT about adjuvant chemotherapy for stage 2 colon cancer.

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The decision to use adjuvant chemotherapy for colon cancer with pathological stage II is complex and should be individualized on a case-by-case basis. Here are some factors that should be taken into consideration when choosing:

1. Evaluate the risk of cancer recurrence: The risk of cancer recurrence can depend on various factors such as tumor size, grade, and lymph node involvement. Conducting a comprehensive evaluation of the patient's pathology report can assist in determining the probability of recurrence.

2. Consider molecular profiling: Molecular profiling can identify the genetic predisposition of cancer and help determine the prognosis of the patient. Molecular profiling can help determine the prognosis of the patient. There are several factors to consider when choosing postoperative adjuvant chemotherapy for colon cancer with pathological stage II:
 3. Risk factors: Patients with high-risk factors such as lymph node involvement, poorly differentiated tumors, or invasion of the blood or lymph vessels may benefit from postoperative chemotherapy.
 4. Patient age and comorbidities: Elderly patients or patients with significant comorbidities may not tolerate aggressive chemotherapy regimens and may benefit more from supportive care.
 5. Patient preference: It is important to discuss the risks and benefits of postoperative chemotherapy with the patient and involve them in the decision-making process.
 6. Molecular analysis: Some patients may benefit from molecular analysis of the tumor to determine if they have microsatellite instability, which may indicate a better prognosis and a lower risk of cancer recurrence. The risk of cancer recurrence is the main factor that determines the need for postoperative adjuvant chemotherapy in colon cancer with pathological stage II. Patients with a high risk of recurrence, such as those with poorly differentiated tumors, lymphovascular invasion, or positive margins, may benefit from chemotherapy.
 7. Evaluate the patient's overall health: Chemotherapy can be associated with significant side effects and may not be appropriate for all patients. Consider the patient's overall health, comorbidities, and performance status when deciding on adjuvant therapy.
 8. Consider genomic testing: Several genomic tests are now available that can help in the selection of patients for adjuvant chemotherapy. These assays assess the expression of genes associated with cancer recurrence and can help identify patients who may benefit from chemotherapy.
 9. Consult guidelines: The American Society of Clinical Oncology (ASCO) Choosing postoperative adjuvant chemotherapy for colon cancer with pathological stage II requires consideration of multiple factors, including patient characteristics, tumor characteristics, and potential benefits and risks of treatment.

Figure 2. After multiple reminders, I asked ChatGPT again about adjuvant chemotherapy for stage 2 colon cancer.

Minnesota, and achieving excellent results in another exam at the University of California, Berkeley. People have tried using it to write resumes and cover letters, explain complex topics, and provide dating advice. These performances of ChatGPT are truly remarkable, leading some to wonder if it will soon replace doctors. However, when asked about its potential applications in medicine, ChatGPT identified three

major shortcomings: first, the immaturity of artificial intelligence technology, which cannot fully replace the professional knowledge and skills of doctors; second, the problem of data bias, which affects the accuracy of ChatGPT's results if the training data is biased; and third, privacy and security concerns, as medical data is the private information of patients and its misuse or leakage can have serious consequences.

Therefore, privacy and security must be carefully considered when using ChatGPT technology.

In exploring ChatGPT's clinical capabilities, it was found that when answering basic and simple medical questions, ChatGPT can provide acceptable answers through its powerful retrieval ability. However, when it comes to more complex clinical decisions and professional knowledge, ChatGPT's performance is unsatisfactory and even produces incorrect answers. For example, when asked how to choose an adjuvant chemotherapy regimen for stage II colon cancer with pathological staging, ChatGPT produced many errors, as shown in Figure 1. However, after multiple questions and reminders that stage II colon cancer should consider high-risk factors for recurrence (such as MSI status), ChatGPT's answers improved, as shown in Figure 2. However, there are still many problems with its answers, such as ChatGPT's inability to understand what pathological staging is, its lack of understanding that stage II colon cancer does not involve lymph node metastasis, and its failure to use the recommended treatment guidelines for this staging. Its answers to medical professional questions are not as good as those of IBM Watson. It is clear that ChatGPT cannot currently provide good references for clinical decision-making, let alone make autonomous decisions. However, from the different answers before and after, we can see that ChatGPT has some learning ability and can improve the quality of its answers through training with human conversation.

In summary, the advantage of ChatGPT is that it can be trained, and its disadvantage is that it can also be trained. If someone with ulterior motives uses a data bomb to train unregulated ChatGPT, it will successfully induce ChatGPT to provide answers to its commercial characteristics. If a large amount of data are used for debugging and training, coupled with the rapid development of AI technology, ChatGPT has the potential to become a powerful medical assistant for humans in the near future^[3]. This is one of the important reasons why we should always maintain a clear-headed and cautious attitude when using ChatGPT.

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L.S.: devised the concept, performed the literature search, and drafted the letter.

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Data availability statement

The template data collection forms are available from the corresponding author (L.S.) upon reasonable request. The correspondence is based exclusively on resources that are publicly available on the internet and duly cited in the 'References' section. No primary data were generated and reported in this manuscript. Therefore, no data have become available to any academic repository.

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