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Short Communication

CHAT GPT - An advanced tool for Cancer care

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Abstract

ChatGPT has gained enormous popularity since its release and has the potential to be widely utilized in the medical field, especially in a context like cancer care. ChatGPT is unique tool for reviewing and extracting important information from cancer patient data interpreting reports from next-generation sequencing, and provide a list of possible clinical trial alternatives. Therefore, we did this review to assess the use of ChatGPT in cancer care, including its ability to offer medication, diagnosis, and treatment.

Keywords: chatGPT; cancer care; oncology; health care; artificial intelligence

Introduction

OpenAI introduced ChatGPT (chat generative pretrained transformer) on November 30, 2022, a unique natural language model that can engage in text-to-text, human-like conversational communication with people. Using human feedback and reinforcement learning, ChatGPT was trained on the original GPT-3.5 model, which was trained on a vast quantity of text data from a variety of sources, including articles, the internet, and frequent crawls. The more potent GPT-4 was made accessible in the ChatGPT Plus premium membership on March 13, 2022. It has drawn a lot of attention since its release and has the potential to be widely utilised in the healthcare system. Despite being a significant step forward in evolution, a possible worry has been highlighted regarding the use of ChatGPT in cancer care, and the topic is under debate. [1,2]

The purpose of this review is to assess the use of ChatGPT in cancer care, including its ability to offer medication, diagnosis, and treatment. The concept, study topics, and application scenarios of ChatGPT require a considerable amount of preceding investigation, even though its usage in healthcare is still in its early phases. Thus, the goal of this study is to offer recommendations for future research as well as insights into the current trends in the use of this technology in cancer care.

Methodology

We have done a considerable literature search using online searches on ''ChatGPT'', locating articles describing its role in cancer care published from 2020 till now; on Pubmed, Scopus, Embase, DOAJ and Cochrane databases.

Extraction of patient records by ChatGPT

ChatGPT is a useful tool for reviewing and extracting important information from patient records that are available, organising data into distinct categories, and producing a one- to two-paragraph summary from a big collection of medical records. This will be a useful tool in any area of medicine, especially in a context like medical oncology where patients may require multiple interventions over a long period of time for management.[3] By condensing the vast amount of patient-level data, ChatGPT can boost productivity and effectiveness while saving a considerable amount of time for doctors. Patients with complex cancer and other medical histories who seek a second opinion from a different centre after completing several lines of treatment will find this service extremely helpful.

In such cases, ChatGPT can be utilised to summarise a patient's biomarker profile, performance status, prognostic markers, disease stage, underlying comorbidities, and previous medications in addition to their current oncological diagnosis.

ChatGPT can also be utilised in natural language generating jobs with low-risk administrative chores by extracting vital medical records. For example, it can be used to produce letters to insurers requesting evidence-based permission of required medications.[2]

Examining a biomarker profile

The field of oncology is expanding quickly, and it can be very difficult for doctors to stay up to date on the latest developments and approvals. Oncology professionals gain knowledge of a broad spectrum of novel anticancer agents and expanded uses for currently available medications each year. Due to widespread genetic testing of tumours, "molecular oncology," which has added a new level of escalating complexity, is becoming a more important part of cancer care practices.

In order to help oncologists create treatment plans, next-generation sequencing (NGS) has been used extensively to find novel and

uncommon cancer mutations. However, the evidence currently available suggests that clinicians are not fully utilising the profound potential of molecular selection, and this is not changing for the better over time. [4]

The inability of busy oncologists, the majority of whom lack extensive training in the nuances of genomic medicine, to recognise every clinically significant biomarker contained in an NGS report—which can run to fifty pages or more—is one of the main obstacles to optimum management, despite the existence of many others. Even though the current strategies to get around these obstacles assume that tens of thousands of oncologists will independently educate themselves on every clinically relevant biomarker, this assumption is unrealistic and will condemn us to never being able to fully realise the potential advantages of broad biomarker testing. [5]

If NGS reports are interpreted by molecular pathologists, molecular oncologists, and other committed experts who run molecular tumour boards or provide commentary on NGS reports for clinical oncologists as a service, then it is possible to delegate some of this process away from oncologists; however, these approaches will not scale to meet the needs of most patients with a wide variety of cancer types who require biomarker testing and interpretation.

Although there is still a long way to go before there is a subspecialist workforce on hand to support biomarker interpretation universally, ChatGPT can be used to interpret oncology NGS reports and provide relevant recommendations based on the most advanced level of biomarker interpretation and identification. Consequently, it is anticipated that ChatGPT will discover the true relationship—validated by a human oncologist—between mutations (biomarkers) and therapeutic agents.

It will be less likely that vital biomarkers will be missed and/or that the wrong biomarker will lead to improper therapy. Keyly, ChatGPT can be utilised as an infinite knowledge base that can be expanded to accommodate an infinite number of oncologists, regardless of where they are located. Geographic differences in access to the best molecular oncology practices may be mitigated in this way. [6]

Possible chores for clinical trial

The development of novel cancer treatment therapies depends on clinical trials. Nonetheless, there are a number of obstacles to taking part in clinical trials, such as not knowing about the trials that are available or the specifics of the studies that are pertinent to the patient's medical history and kind of tumour. [7] Patients may also be unable to take part in a clinical study if they live a long way from the cancer centre. The patient's quality of life, recommended course of treatment, cancer stage, and clinical trial participation are all impacted by travel distance. In a perfect world, our patients would have access to the greatest clinical trial choice available at the closest cancer centre. But for a cancer patient, sorting through and ranking the available clinical trial alternatives is a labour- and time-intensive process that involves searching through a large database. [8]

With the help of ChatGPT, a comprehensive medical history and all of the information available on ClinicalTrials.gov can be interpreted to provide a list of possible clinical trial opportunities for which the patient may be qualified. Distance and clinical relevance should be used to order the list based on the patient's needs and requirements. Additionally, it must to check eligibility and the progress of the present recruiting. [7,9]

In ChatGPT, OpenAI has just introduced early plugin support. Through ChatGPT's natural language conversation-based interface, plugins are tools made especially for end users to safely execute functions, access current information, and leverage third-party services. With twelve plugins available as of right now, ChatGPT is now a very strong virtual assistant, enabling users to conduct tasks like making reservations, ordering from nearby grocery stores, scheduling travel, and more. [2]

ChatGPT is specifically restricted to anything published online through 2021, with a "blind spot" covering years' worth of occurrences beyond that date.The capacity to encode data longitudinally is provided by ChatGPT's plugins, which are useful given the annual developments in oncology and the requirement to evaluate clinical trial and molecular databases instantly. Thus, ChatGPT plugins have a lot of potential to improve the treatment of cancer. [10]

DRAWBACKS of ChatGPT

The current version of ChatGPT has several important shortcomings, despite its obvious promise to address severe bottlenecks in cancer care with similar AI generative content technologies. Currently, ChatGPT is not in compliance with the Health Insurance Portability and Accountability Act (HIPAA). This means that if direct patient information is used to create a summary of care, evidence-based recommendations for molecularly selected therapy, or clinical trial recommendations, there is a risk of patient privacy being violated and patient health information, including names, phone numbers, and geolocations, being leaked. [2]

Furthermore, employing ChatGPT to gather and create patient replies does not require informed consent, which may contradict the patient's legal rights. Like other AI chatbots, ChatGPT is taught using a vast amount of textual content from the internet, some of which may contain bias and false information about socially vulnerable groups. As a result, it may reinforce these prejudices and occasionally give patients inaccurate or even dangerous information. [10]

Conclusion

Platforms like ChatGPT have the potential to significantly advance oncology care as well as a number of other medical specialties. In the context of cancer care, ChatGPT plugins are ideally suited to distil the most important elements of a patient's cancer workup and management from a substantial number of medical records. This effectively enables a streamlined, extremely valuable synopsis from an oversized chart.

For the oncologist end user who finds it difficult to maintain the knowledge base necessary for this task, it is highly suitable to apply a complex algorithm to interpret NGS testing reports by identifying clinically relevant biomarkers and produce a customized translation to clinical recommendations. This is done over a wide geographic area and for a far larger patient population than can be served by the extremely limited number of human experts available to assist. Additionally, ChatGPT might be improved to examine a patient's clinical characteristics and previous treatments, compare them to the total number of clinical trials that the patient may be eligible for, and then present a list of possibilities ranked by trial characteristics, trial location, or other criteria.

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