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Short communication

# The Current Status and Future Prospects of Artificial Intelligence in the Management of Peptic Ulcer Bleeding

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## SHORT COMMUNICATION

Peptic Ulcer Bleeding (PUB) has become less common over the last two decades, and physician experience managing patients with PUB has decreased, particularly among new endoscopists. From initial assessment until hospital release, a patient with PUB management requires collaborative treatment from the emergency department, gastroenterologist, radiologist, and surgeon. Artificial Intelligence (AI) has made a significant difference in people's lives [1]. AI technologies, in particular, have shown considerable promise in improving human performance in many areas of gastroenterology. To improve endoscopist performance, an AI system was recently created for commercial use to detect or diagnose polyps during colonoscopy.

Despite the fact that PUB is a long-standing health issue, AI technologies may soon have an impact on endoscopists' clinical practise by increasing the quality of therapy for these patients. We examined recent relevant literature and gave future perspectives that are required to integrate such AI tools into real-world practice to update the current position of AI application in PUB. Peptic Ulcer Bleeding (PUB) is a common Gastrointestinal (GI) emergency that necessitates immediate medical attention, with a fatality risk of 2%-10%. The bleeding-related hospitalisation and death rates of PUB have dropped recently, thanks to a lower incidence of peptic ulcer disease and the improvement of endoscopic therapy. The best management method for paternity care has been updated by international guidelines [2].

Computer programmes that can imitate the human cognitive process in problem-solving and learning are referred to as Artificial Intelligence (AI). The computer can process enormous amounts of data using the Machine Learning (ML) approach to create numerous predictive models. Since 2010, Deep Learning (DL) has continued to replicate human neural networks with increasing performance, particularly in image processing. Due to the decreased frequency of peptic ulcer disease, a UK survey study found that GI trainee experience for PUB management decreased from 76% in 1996 to 15% in 2011. AI technology for PUB could improve patient triage accuracy, aid in making precise therapy decisions, and eliminate human errors caused by inexperience, especially in an emergency. In this review, we use terms like "artificial intelligence," "peptic ulcer bleeding," "nonvariceal bleeding," "deep learning," or "machine learning" from a PubMed search to determine the present state of AI in PUB management and obtain insight into the function of AI in PUB treatment. Despite the fact that PUB is a prevalent medical emergency, patient management is still inadequate, despite the existence of many clinical recommendations. Patient outcomes have been linked to the heterogeneity of adherence to practice recommendations. Meanwhile, AI's recent advancements have had a significant impact on people's lives. Using this technique, as opposed to the traditional way to patient management, may improve our patient care in emergency scenarios, such as PUB, since it can quickly stratify patient risks, avoid human mistake, and provide diagnostic support. Although AI models have showed promise in the management of patients with PUB when compared to traditional techniques, significant limitations have been identified, necessitating further research. To begin, there are differences in the prevalence and aetiology of peptic ulcer disease between Western and Eastern countries. The majority of advanced AI models derived from hospital-based patient data may not be relevant to other ethnic groups. Second, the training quality of the created model is determined by the training data quality. Many domains of people's life have public datasets for ML model construction; however high-quality public health-related information from PUB remains inaccessible. Unlike various open datasets that offer endoscopic photos for colon polyps or capsule endoscopy, there are no public endoscopy datasets for PUB, owing to the difficulty in getting high-quality endoscopy images during an emergency surgery. As the incidence and prevalence of PUB decreases over time, a future collaborative gathering of datasets, particularly on a nationwide or international scale, is required to increase model development quality and accuracy. More research on the use of AI for real-time diagnostic assistance during emergency endoscopic procedures is also needed. Third, because PUB patient care necessitates collaboration, AI's current application in PUB management should primarily focus on the initial patient triage [3].

In order to improve the present clinical process, such AI technologies need be integrated seamlessly with patient electronic medical records and endoscopic platforms. Fourth, interventional radiologists play

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an important role in PUB management by providing crucial salvage therapy for patients with persistent bleeding. Although AI has been studied for coronary artery angiography analysis, no similar research has been done for GIB cases. To assist unskilled radiologists in identifying the culprit bleeder, such AI support tools must be developed, particularly during a false-negative angiography. Fifth, although multiple findings demonstrating that AI tools are similar to or more accurate than traditional approaches, a prospective comparative study is needed to demonstrate the usefulness and robustness of such AI tools in clinical scenarios to improve patient care quality [4].

Patients with PUB, which is a long-term health concern, may benefit from a novel AI-based method to better care management. However, given the decreasing prevalence of PUB and clinical expertise, further research is needed before these strategies may be used in everyday treatment.

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