Can AI Detect Incidental Findings on Medical Scans?

Rasit Dinc

Rasit Dinc Digital Health & AI Research

Abstract

In the realm of medical imaging, radiologists are trained to focus on the specific reason for a scan. However, it is not uncommon for them to encounter unexp...

Can AI Detect Incidental Findings on Medical Scans?

Author: Rasit Dinc

Introduction

In the realm of medical imaging, radiologists are trained to focus on the specific reason for a scan. However, it is not uncommon for them to encounter unexpected abnormalities, known as incidental findings or "incidentalomas." These findings, while unrelated to the primary purpose of the scan, can sometimes be early indicators of serious conditions, including cancer. The sheer volume of medical scans performed daily, coupled with the pressure to deliver timely reports, creates a significant challenge in consistently identifying and managing these incidental findings. This is where artificial intelligence (AI) is emerging as a powerful ally for healthcare professionals. [1]

The Challenge of Incidental Findings

Incidental findings are a common occurrence in radiology, with some studies suggesting they appear in up to 40% of imaging scans. [2] However, a significant portion of these findings, estimated to be over 70%, are not followed up on appropriately. [2] This can be attributed to several factors, including the radiologist's focus on the primary diagnosis, the subtlety of the findings, and the lack of a standardized system for reporting and tracking them. The consequences of missed incidental findings can be severe, leading to delayed diagnoses, poorer patient outcomes, and increased healthcare costs.

AI as a Solution

Artificial intelligence, particularly in the form of machine learning and natural language processing (NLP), offers a promising solution to this challenge. AI algorithms can be trained to analyze vast datasets of medical images and radiology reports, learning to identify patterns and anomalies that may be indicative of incidental findings. These systems can work in the background, automatically flagging suspicious findings for further review by a radiologist. This not only enhances the accuracy of detection but also streamlines the workflow, allowing radiologists to focus their attention on the most critical cases.

AI in Action: Real-World Examples

Several studies have demonstrated the effectiveness of AI in detecting incidental findings. For instance, a study published in *Radiology: Cardiothoracic Imaging* evaluated an AI tool for detecting incidental pulmonary embolisms (IPE) in cancer patients. The tool achieved a high sensitivity of 91.6% and significantly reduced the time to diagnosis from days to just one hour. [3] Another study in *Radiology* showed that a fully automated AI tool could accurately identify a wide range of high-risk extrapulmonary features on chest CT scans, as well as predict mortality risk with a high degree of accuracy. [3]

The Impact on Radiologists' Workflow

It is crucial to understand that AI is not intended to replace radiologists but rather to augment their expertise. AI tools act as a second pair of eyes, helping to prioritize cases and reduce the risk of missed findings. By automating the initial screening process, AI can help to alleviate the workload of radiologists, allowing them to dedicate more time to complex cases and patient care. However, the successful implementation of AI in clinical practice requires seamless integration into existing workflows. Simply displaying AI results in a widget may not be sufficient; deeper integration, such as embedding AI findings directly into the radiologist's worklist, is necessary to optimize the image interpretation workflow. [3]

Challenges and Considerations

Despite the immense potential of AI, there are several challenges and considerations that need to be addressed. One of the primary concerns is the risk of alert fatigue, where an excessive number of false-positive alerts could lead to radiologists ignoring the system's recommendations. Therefore, it is essential to develop AI algorithms with high specificity to minimize false positives. Additionally, the successful adoption of AI requires the buy-in of radiologists. Some may be hesitant to adopt new technologies due to concerns about changes in their workflow or an increase in their workload. Therefore, it is important to involve radiologists in the development and implementation of AI tools to ensure they meet their needs and are user-friendly. [3]

The Future of Incidental Findings Detection

The future of incidental findings detection lies in the synergy between human expertise and artificial intelligence. As AI algorithms become more

sophisticated and integrated into clinical workflows, they will play an increasingly important role in opportunistic screening, where imaging data is proactively analyzed for a wide range of conditions, not just the one it was originally ordered for. This has the potential to transform reactive medicine into proactive healthcare, enabling earlier diagnosis and treatment for a multitude of diseases. Continued research and development in this field are essential to unlock the full potential of AI in improving patient outcomes.

References

[1] "Incidentalomas" in the Age of Artificial Intelligence - PMC. (2023). Retrieved from https://pmc.ncbi.nlm.nih.gov/articles/PMC10593655/

[2] How Incidental Findings Platforms Are Transforming Patient Care. (n.d.). Retrieved from https://www.eonhealth.com/blog/how-incidental-findings-platforms-are-transforming-patient-care

[3] AI Tools Can Aid in Identifying Incidental Findings. (2025). Retrieved from https://www.rsna.org/news/2025/june/ai-helps-identify-incidental-findings