

Empowering brain cancer diagnosis: harnessing artificial intelligence for advanced imaging insights

Omar S Al-Kadi, Roa'a Al-Emaryeen, Sara Al-Nahhas, Isra'a Almallahi, Ruba Braik
and Waleed Mahafza

Abstract

Artificial intelligence (AI) is increasingly being used in the medical field, specifically for brain cancer imaging. In this review, we explore how AI-powered medical imaging can impact the diagnosis, prognosis, and treatment of brain cancer. We discuss various AI techniques, including deep learning and causality learning, and their relevance. Additionally, we examine current applications that provide practical solutions for detecting, classifying, segmenting, and registering brain tumors. Although challenges such as data quality, availability, interpretability, transparency, and ethics persist, we emphasise the enormous potential of intelligent applications in standardising procedures and enhancing personalised treatment, leading to improved patient outcomes. Innovative AI solutions have the power to revolutionise neuro-oncology by enhancing the quality of routine clinical practice.