CBS018

Differential diagnosis between somatic and psychiatric disorders based on laboratory tests integrated with neuroimaging

K. Krysta

Department of Rehabilitation Psychiatry, Medical University of Silesia, Katowice, Poland
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Abstract: The differentiation between somatic and psychiatric disorders presents a significant challenge in clinical practice due to overlapping symptomatology and complex etiologies. This abstract proposes an integrated approach utilizing laboratory tests and neuroimaging techniques to enhance diagnostic accuracy and improve patient outcomes. Somatic disorders, characterized by physical symptoms with identifiable organic causes, often mimic psychiatric conditions, leading to misdiagnosis and inappropriate treatment. Laboratory evaluations play a crucial role in ruling out medical conditions that may present with psychiatric-like symptoms. Thyroid function tests, vitamin B12 level assessments, and screening for infections are vital in this process. Routine blood tests further aid in detecting systemic conditions contributing to psychiatric presentations. Neuroimaging techniques offer visual insights into brain structure and function, facilitating the differentiation between psychiatric and neurological conditions. Structural imaging modalities like MRI and CT scans can reveal abnormalities such as tumors or lesions. Functional imaging, including PET and SPECT scans, assesses cerebral metabolism and blood flow, identifying anomalies associated with specific psychiatric disorders. Integrating laboratory tests with neuroimaging significantly enhances diagnostic precision. In suspected dementia cases, for instance, laboratory tests can exclude metabolic or infectious causes, while neuroimaging can identify characteristic patterns of Alzheimer's disease or vascular dementia. This combined approach ensures a thorough evaluation, reducing misdiagnosis and facilitating targeted treatment strategies. Clinical studies have demonstrated the efficacy of this integrated approach in improving diagnostic accuracy for conditions like major depressive disorder and bipolar disorder. Functional neuroimaging has also proven instrumental in distinguishing between psychiatric disorders and neurological conditions such as epilepsy. Despite its advantages, this approach faces challenges, including cost, availability, and the need for standardized interpretation protocols. Future directions include advancements in neuroimaging accessibility, research into novel biomarkers, and the integration of artificial intelligence for enhanced diagnostic accuracy and personalized treatment planning. In conclusion, integrating laboratory tests with neuroimaging represents a significant advancement in the differential diagnosis of somatic and psychiatric disorders. This comprehensive approach facilitates accurate diagnosis, ensuring patients receive appropriate and effective treatment, ultimately leading to improved patient outcomes.

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CBS019

History and definitions of AI

E. Chumakov

Department of Psychiatry and Addiction, St Petersburg State University, St Petersburg, Russian Federation
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Abstract: Artificial Intelligence (AI) has evolved from philosophical musings to a crucial component of modern technology. The concept of using computer technology to simulate thinking and intelligent behavior was first described by Alan Turing in 1950. The Dartmouth Conference in 1956 marked a pivotal moment, coining the term "artificial intelligence" and fostering interdisciplinary collaboration. Further contributions to the development of AI theory were made by scholars such as John McCarthy, Valerie Barr, Edward Feigenbaum, Claude Shannon and others. The concept of creating AI is to form a system that would be able to operate autonomously, solving intellectual tasks in a manner similar to human cognitive processes. This is achieved by using algorithms that are translated into computer code containing instructions for quickly analyzing and transforming data into conclusions, information, or other outputs. Throughout the subsequent decades, AI experienced cycles of optimism and disillusionment, known as "AI winters," primarily due to unmet expectations regarding computational capabilities and practical applications. The resurgence of AI in the 21st century can be attributed to breakthroughs in machine learning, especially deep learning, and the availability of vast datasets and increased computational power. Today, AI is defined broadly as the capability of a machine to imitate intelligent human behavior, encompassing a range of subfields including natural language processing, robotics, and computer vision. As AI continues to evolve, its definitions are adapted to address ethical considerations and the implications of autonomy in decision-making systems. Current discourse often examines AI not only as a technological phenomenon but also as a sociocultural force, raising questions about accountability, bias, and the future of work. This presentation will reflect the complex path of AI development and the shifting paradigms that define its scope and impact on modern society.

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CBS020

What can AI do for mental health care

U. Volpe

Deaprtment of Clinical Neurosciences/DIMSC, Università Politecnica delle Marche, Ancona, Italy
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Abstract: Artificial intelligence (AI) is reshaping mental health care by improving diagnosis, treatment, and patient support. AI-driven tools streamline administrative tasks, enhance clinical documentation, contribute to medical education, and enable continuous symptom monitoring. Additionally, AI augments text-based support programs, offering accessible psychological interventions. However, while AI applications have been assessed for perceived