Individual Research Project Presentations
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Systematic Review on Genetic Variation and Response to Opioid in Patients with Chronic Pain

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Abstract

Background: Opioids are prescribed in both primary and secondary care in patients with various forms of chronic pain. The efficacy of opioids has previously been seen to have some genetic influence. This systematic review aims to comprehensively review the literature on the impact of genetic variation on opioid efficacy in clinical practice in patients with chronic pain.

Methods: This systematic review followed the PRISMA method. Literature searches were conducted on Google Scholar, Ovid Embase, Cochrane Library (Wiley online version), and Pubmed, using keywords such as 'Genetic variation', 'Response', 'Opioids, and 'Chronic pin' to identify studies published between 2013 and 2023.

Results: 13 studies are included in the systematic review, no papers were excluded via quality assessment. The analysis of these has shown that genetic variation affecting the μ-opioid receptor (OPRM1) can affect opioid response, with the A118G (OPRM1 rs1799971) haplotype having an impact on analgesia; some genotypes (particularly those homozygous for OPRM1 mutations) require more analgesia, while others require less. Additionally, OPRM1 interacts with the ABCB1 opioid transporter genes, influencing beta-endorphin and opioid sensitivity. Genetic variations in the COMT enzyme can impact opioid efficacy, causing specific genotypes to require less opioids than others. The results were inconclusive due to their contradictory nature.

Conclusions: As there are differing results, within research, there is no significant correlation between genetic variables and outcomes related to pain or opioid intake.

Keywords: Genetic Variation | Polymorphism | Single Nucleotide Polymorphism | Response Efficacy | Opioid | Opiate Analgesic | Morphine | Chronic Pain

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