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Submission date: 15-Sep-2023 11:02AM (UTC-0500)
Submission ID: 2167033726
File name: week_3_discussion_2_responses.docx (15.81K)
Word count: 750
Character count: 4861

Response to Hade Dabbagh

Hello Hade, thanks for sharing such an informative response to this week's discussion post questions on psychotropic drugs. In completing the discussion, you chose to focus on carbamazepine, a medication that is metabolized by CYP3A4 (Fuhr et al., 2021). Going through your discussion post was educative as I learned that carbamazepine is a strong inducer of CYP3A4 and a substrate of CYP3A4, suggesting that medication has the capabilities of autoinduction (Woo & Robinson, 2020). A further exploration of this medication revealed that it induces the metabolism of different drugs, including its own (Fuhr et al., 2021). Inhibitors and inducers also affect the medication's plasma levels. Notably, the coadministration of carbamazepine alongside other drug-sensitive CYP2B6 OR CYP3A4 substrates or perpetrators is likely to cause complex interaction patterns (Fuhr et al., 2021).

Genetics and ethnic backgrounds play a significant role in determining how the enzymes are metabolized across different individuals. Genetic component variations affect the activity and expression of enzymes involved in drug metabolism, including the P450 enzymes. Understanding the patient's ethnic background is also significant as it helps in understanding the differences in the genetic variations that significantly impact effective carbamazepine metabolism. Learning about the genetic and ethnic background of the individual helps the care providers understand the possible drug response and potential differences in drug efficacy of adverse reactions. Understanding cytochrome P450 (CYP450) enzymes is crucial in psychiatric medication prescribing because these enzymes are paramount in the metabolism of many psychiatric drugs. CYP450 enzymes are responsible for breaking down medications, including antidepressants and antipsychotics, which affects their effectiveness and potential side effects (Taylor et al., 2020). Therefore, understanding the activity and genetic variations of CYP450

enzymes can help healthcare professionals personalize medication dosages and select appropriate drugs to optimize treatment outcomes for individuals with mental health conditions.

References

Taylor, C., Crosby, I., Yip, V., Maguire, P., Pirmohamed, M., & Turner, R. M. (2020). A review of the important role of cyp2d6 in pharmacogenomics. *Genes*, 11(11), 1295. https://doi.org/10.3390/genes11111295

Woo, T. M., & Robinson, M. V. (2020). Pharmacotherapeutics for advanced practice nurse prescribers (5th ed.). F.A. Davis Company.

Fuhr, L. M., Marok, F. Z., Hanke, N., Selzer, D., & Lehr, T. (2021). Pharmacokinetics of the CYP3A4 and CYP2B6 inducer carbamazepine and its drug–drug interaction potential: a physiologically based pharmacokinetic modeling approach. *Pharmaceutics*, *13*(2), 270. https://doi.org/10.3390%2Fpharmaceutics13020270

Response to Antonette Manigsaca

Hello Antonette, your response to this week's discussion was very informative and engaging. You noted that amitriptyline is a tricyclic antidepressant (TCA) medication utilized in the treatment of mental health conditions including anxiety and depression and works by preventing the reuptake of the neurotransmitter's norepinephrine and serotonin in treating mental health conditions, including depression (Marwaha & Thour, 2023). While completing my discussion, I noted that amitriptyline raises the concentration of neurotransmitters in the brain such as serotonin in facilitating its therapeutic effect. Although the medication effectively treats conditions including anxiety and depression, it is paramount to the condition's possible adverse effects, including motor coordination impairment (Watanabe et al., 2022). It is significant to

consider the genetic and ethnic background of patients as it significantly impacts enzyme metabolization. Specifically, taking amitriptyline alongside other antidepressants will likely raise serotonin levels or lead to serotonin syndrome.

In prescribing clients with amitriptyline for different mental health conditions, including depression and anxiety, ethnic and genetic variations affect the activity and efficiency of enzymes responsible for drug metabolism, potentially leading to variations in drug response among individuals (Stahl, 2017). Specific ethnic backgrounds might have unique variations that can impact enzyme function, further contributing to drug metabolism and response differences. CYP450 is a crucial enzyme metabolizing many psychiatric medications, including amitriptyline. Understanding how this enzyme functions is essential because it plays a significant role in determining the effectiveness and safety of these medications. Additionally, CYP450 variations can lead to variations in drug metabolism, affecting individual responses to psychiatric medications and their potential side effects.

References

Marwaha, R., & Thour, A. (2023). Amitriptyline. https://www.ncbi.nlm.nih.gov/books/NBK537225/

Stahl, S. M. (2017). Stahl\'s essential psychopharmacology: Prescriber\'s guide (6th ed.). Cambridge University Press.

Taylor, C., Crosby, I., Yip, V., Maguire, P., Pirmohamed, M., & Turner, R. M. (2020). A review of the important role of cyp2d6 in pharmacogenomics. *Genes*, 11(11), 1295. https://doi.org/10.3390/genes11111295

Watanabe, M., Takao, C., Liu, Z., Nayanar, G., Suga, T., Hong, C., Tu, T. T. H., Yoshikawa, T., Takenoshita, M., Motomura, H., Nagamine, T., & Toyofuku, A. (2022). The

Effectiveness and Adverse Events of Amitriptyline and Aripiprazole in Very Elderly Patients With BMS. *Frontiers in Pain Research*, *3*.

https://doi.org/10.3389/fpain.2022.809207

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