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BIO 294 Genetics

08 April 2024

Writing Assignment #5: *Overdosing on chemo: A common gene test could save hundreds of lives each year*

This article is discussing the fatal effects of some standard chemo treatment. The chemo treatment/chemical being discussed in this article is specifically fluorouracil (5-FU) and a nearly identical drug used in place of 5-FU in some cases, capecitabine. The article is bringing attention to the use of 5-FU and similar drugs because when individuals with an enzyme deficiency for the enzyme that is responsible for metabolizing the drugs, this treatment option can be fatal. It has been discovered that an estimated 1 in 1000 patients administered this drug treatment die because of the effects of the drug on their body. According to Diasio and Offer, “Using data from a large prospective cooperative group clinical trial (Alliance N0147), investigators estimated that approximately one in three patients that received current-generation multi-drug regimens for the adjuvant treatment of colon cancer experienced grade 3 or higher toxicities that are typically associated with 5-FU use” (Diasio & Offer, 2022). Even if the treatment doesn't prove to be fatal for some individuals, hundreds of patients are still hospitalized and become very ill as a result of these treatment options, due to an enzyme deficiency. However, there is a genetic test that can be administered to patients that are being prescribed this treatment option to ensure that they do not have the enzyme deficiency. Although there is genetic testing to avoid the fatal effects of this drug, most doctors do not test their patients prior to prescribing this treatment drug, which in some cases has fatal results. Research has suggested that even individuals with this risky gene variant may not get sick or die if prescribed low doses of the drug. The genetic testing to detect this variant gene variation or enzyme deficiency could save hundreds of lives if required throughout the oncology field. This article relates to the study of genetics, because it is addressing the use of genetic testing to prevent fatal or negative effects of cancer treatment drugs. In addition, this article is directly discussing how specific enzyme deficiencies affect the way the body is able to metabolize specific drugs.

Works Cited

Allen, A. (2024, April 1). *Overdosing on chemo: A common gene test could save hundreds of lives each year*. The Virginian-Pilot. https://www.pilotonline.com/2024/04/01/overdosing-on-chemo-a-common-gene-test-could-save-hundreds-of-lives-each-year/

Diasio, R. B., & Offer, S. M. (2022). Testing for Dihydropyrimidine Dehydrogenase Deficiency to Individualize 5-Fluorouracil Therapy. *Cancers*, *14*(13), 3207. https://doi.org/10.3390/cancers14133207