EVALUACIÓN DEL DAÑO OXIDATIVO Y SU RELACIÓN CON EL POLIMORFISMO DEL GEN OGG1 EN PACIENTES PSIQUIÁTRICOS CON TRASTORNO DEPRESIVO CON SÍNTOMAS DE ANSIEDAD

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RESUMEN

La depresión y la ansiedad son trastornos mentales comunes que afectan a millones de personas en todo el mundo. Estas enfermedades tienen un impacto significativo en la calidad de vida de los individuos y pueden generar discapacidad a largo plazo. En el contexto de la depresión crónica y la ansiedad, los pacientes presentan niveles elevados de estrés oxidativo y un incremento en los marcadores de daño oxidativo en el ADN. Basado en esto, el objetivo de este trabajo fue evaluar el daño oxidativo y su relación con el polimorfismo del gen OGG1 en pacientes psiquiátricos con trastorno depresivo y ansiedad de la Ciudad de Barranquilla. Para alcanzar este objetivo, se colectaron muestras de sangre periférica de 40 pacientes con depresión y ansiedad y de 30 personas control sin antecedentes de esta patología. Mediante el ensayo cometa alcalino estándar y modificado fue analizado el daño oxidativo y mediante PCR-RFLP fue analizada la presencia del polimorfismo OGG1 *Ser326Cys.* Los resultados obtenidos evidenciaron mayor daño en el ADN (cometa alcalino estándar) y mayor daño oxidativo en purinas (cometa usando enzima FPG) en los pacientes con depresión y ansiedad comparado con el grupo control. Además, fue encontrado que los pacientes portadores del polimorfismo OGG1 *Ser326Cys* presentaron mayores niveles de daño que los individuos portadores de las variantes OGG1 *326 Ser/Ser*

y *OGG1 326 Cys/Cys.* En cuanto a las variables relacionadas con el estilo de vida, fue encontrada una correlación inversa entre el consumo de frutas, vegetales y el % de ADN en la cola del cometa estándar y también para el cometa usando enzima FPG. Se encontró una correlación positiva; específicamente, las personas que consumían más alcohol presentaron mayores niveles de daño en el ADN basal y daño oxidativo. Sin embargo, no fue encontrada una asociación significativa entre la edad y los parámetros de daño ni de las variables sociodemográficas con la presencia o ausencia del polimorfismo y tampoco la influencia del uso de diferentes fármacos en el daño en el ADN. Estas evidencias sugieren una asociación entre la depresión y la ansiedad con el daño del ADN, así como la influencia del polimorfismo OGG1 *Ser326Cys* en la susceptibilidad al daño del ADN. Estos hallazgos podrían tener implicaciones importantes para comprender los mecanismos subyacentes y desarrollar enfoques terapéuticos personalizados para los pacientes con trastorno depresivo con síntomas de ansiedad.

Palabras clave: Daño oxidativo, ensayo cometa, ERO, gen OGG1, PCR-RFLP, enzima FPG.

ABSTRACT

Depression and anxiety are common mental disorders that affect millions of people worldwide. These illnesses have a significant impact on individuals' quality of life and can lead to long-term disability. In the context of chronic depression and anxiety, patients exhibit elevated levels of oxidative stress and an increase in markers of oxidative damage to DNA. Based on this, the aim of this study was to assess oxidative damage and its relationship with the OGG1 gene polymorphism in psychiatric patients with depressive and anxiety disorders in the city of Barranquilla. To achieve this goal, peripheral blood samples were collected from 40 patients with depression and anxiety and from 30 control individuals without a history of this pathology. Oxidative damage was analyzed using both standard and modified alkaline comet assays, and the OGG1 Ser326Cys polymorphism was analyzed using PCR-RFLP. The results showed higher DNA damage (standard alkaline comet) and greater oxidative damage in purines (comet using FPG enzyme) in patients with depression and anxiety compared to the control group. Additionally, it was found that patients carrying the OGG1 Ser326Cys polymorphism exhibited higher levels of damage than individuals carrying the OGG1 326 Ser/Ser and OGG1 326 Cys/Cys variants. Regarding lifestyle-related variables, an inverse correlation was found between fruit and vegetable consumption and the % of DNA in the tail of the standard comet, as well as for the comet using the FPG enzyme. A positive correlation was found; specifically, individuals who consumed more alcohol had higher levels of damage in basal DNA

and oxidative damage. However, no significant association was found between age and damage parameters, nor between sociodemographic variables and the presence or absence of the polymorphism, and there was no influence of the use of different drugs on DNA damage. These findings suggest an association between depression and anxiety with DNA damage, as well as the influence of the OGG1 Ser326Cys polymorphism on susceptibility to DNA damage. These findings could have important implications for understanding the underlying mechanisms and developing personalized therapeutic approaches for patients with depressive disorder with anxiety symptoms.

Keywords: Oxidative damage, comet assay, ROS, OGG1 gene, PCR-RFLP, FPG enzyme.

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