Serum and Genetic Analysis of Serotonin Associate to Geriatric Depression

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Depression is both underdiagnosed and undertreated in primary care settings. Symptoms of depression in older adults are often overlooked and untreated because they coincide with other late life problems, (Espinosa, et. Al. 2007).

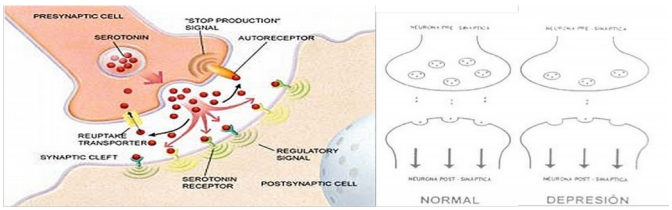
Background:
Depression is a common mental disorder, characterized by sadness, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, feelings of tiredness, and poor concentration, Over 20% of adults aged 60 and over suffer from a mental or neurological disorder (excluding headache disorders) and 6.6% of all disability (disability adjusted life years-DALYs) among over 60s is attributed to neurological and mental disorders. The most common neuropsychiatric disorders in this age group are dementia and depression.

Depression also increases the perception of poor health, the utilization of medical services and health care costs. Older adults with depressive symptoms have poorer functioning compared to those with chronic medical conditions such as lung disease, hypertension or diabetes. Because of this, it is important to research and develop new options to early contribute for diagnostic and prevention methods in older adults. (WHO, 2012).

Previous research revealed a robust genetic component in depressive disorders, with heritability estimates between 33% and 42%.

Recent efforts have been done to understand the biological basis of susceptibility to depression. Research results have demonstrated that serotonin plays an important role to modulate neural activity and a wide range of neuropsychological processes; so much so that drugs that target serotonin receptors are used widely in psychiatry and neurology. It is widely accepted that abnormal serotonergic function is implicated in the onset and course of depressive disorders (Alenina, Klempin, 2014).

Recent attempts to understand the biological bases of depression vulnerability have focused on both genetic and neural risk factors. One of the most commonly studied genetic polymorphisms is the serotonin transporter-linked polymorphic region (5-HTTLPR). The short (S) allele of the 5-HTTLPR has been associated with several psychiatric conditions, perhaps most notably depression. (Gaoa et al. 2014; Mitjans, Arias. 2012).



Name of the Study	Author/Year	Methodology	Findings
The Association Of Serotonin Transporter Gene Polymorphism And Geriatric Depression: A Meta-Analysis.	Gaoa, et al.; (2014)	Meta-analysis of 579 articles of cases of geriatric depression and 1,372 control studies in association to the polymorphism 5-HTTPLR.	The findings suggest that the polymorphism 5-HTTLPR is of importance in the development of the geriatric depression.
Are There Depression And Anxiety Genetic Markers And Mutations? A Systematic Review	Lacerda-Pinheiro, et al.; (2014)	Metaanalysis N: 29 articles	The polymorphisms of the serotonin (5-HTTLPR, HTR1A, HTR2A) contribute to generate conditions of depression
The 5-HTTLPR s/s Genotype at the Serotonin Transporter Gene (SLC6A4) Increases the Risk for Depression in a Large Cohort of Primary Care Attendees	Cervilla, at al.(2006)	Experimental N=737	The results are consistent with the previous reports that suggest a small but independent effect for the genotipo s / s 5-HTTLPR the depression risk increases.
The Power of Sample Size and Homogenous Sampling: Association Between the 5-HTTLPR Serotonin Transporter Polymorphism and Major Depressive Disorder.	Barbara Hoefgen, et al. (2005)	Experimental Study N= 466 N= 836 control simple random sampling	The short alelo of 5-HTTLPR was significantly more frequent in the patients than in the control panel The study supports a participation of 5-HTTLPR in the etiology of the biggest depressive disorder
Analysis Of The Normative Conditions Of Oral Health, Depression And Serotonin-transporter-linked Promoter Region Polymorphisms In An Elderly Population	Cangussu, et al. (2012).	Experimental N: 200	Came to the conclusion where suggest that individuals depressive elderly residents in the community showed no association with alterations in the regulatory conditions of oral health.

Methods:
This study will be performed in the elderly population of Saltillo Coahuila city (Mexico), from January to December 2015. The study will have a descriptive comparative correlational design with two different groups: depression group and non-depression group. The depression group will be constituted by patients using the center for epidemiological studies-depression score (CESD). Total summary scores range from 0 to 60, with clinical levels of depressive symptomatology being associated with scores of 16 or higher. The sample size will be estimated using the nQuery Advisor 7.0 software; level of confidence 90%, margin of error 5%, and a correlation of .35. Written informed consent will be obtained in accordance with the "Hospital Universitario Dr. Gonzalo Valdez" institution.

Each participant will provide peripheral blood samples. Genomic deoxyribonucleic acid (DNA) will be prepared from lymphocytes cells using the Qiagen QIAamp® Blood Mini Kit (Qiagen, Inc, Valencia, California). Polymerase chain reaction (PCR) will be used to amplify the serotonin transporter promoter region (5-HTTLPR). Forward (5′-ATGCCAGCACCTAAC CCC TAA TGT-3′) and reverse (5′-GGACC GCA AGG TGG GCG GGA-3′) specific primers will be used. These primers amplify a 419 base pair fragment for the 16-repeat L allele, and a 375 base pair fragment for the 14-repeat S allele (Michaelovsky et al. 1999).

In order to test the hypothesis of differential associations between depressive symptoms and polymorphism genotype, a multiple regression analysis with genotype will be realize. Tests for behavioral differences between groups on age, personality, education level, economic status and gender will be done using independent sample t-tests.

Results:
The results of two groups will be compared. Descriptive statistics, comparison of means and correlation analysis will be used.

Conclusion:
We will discuss the possible association between depression and the serotonin transporter promoter region in the elderly population of Saltillo Coahuila city, Mexico based on the scientific evidence available in the advanced nursing practice and their implications in positive health outcomes in Mexican older adults.

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