Researchers detect a link between inflammatory alterations and post-traumatic stress disorder

Geovana Benites / 3 de agosto de 2023 / In English

Health | Study investigated which inflammatory and oxidative stress markers are linked to the disorder. Findings may contribute to new treatments

**By Geovana Benites*

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**Photo: Gustavo Diehl/JU*

Patients with severe psychiatric illnesses show signs of accelerated aging and increased cardiovascular and autoimmune diseases. Understanding what causes this clinical condition was the challenge faced by researchers from the Department of Psychiatry of the Faculty of Medicine of UFRGS. They identified alterations in inflammatory markers (proteins that can indicate whether there is any inflammatory process in the body) in patients diagnosed with post-traumatic stress disorder (PTSD). The study may support the research and development of new therapeutic strategies that focus on these markers, such as the use of immunomodulators and anti-inflammatories. "There are various markers for inflammation and oxidative stress, and our goal was to determine which ones are specifically affected in PTSD," says Ives Passos, a member of the research group and professor at the School of Medicine of UFRGS.

In the article "Inflammatory and oxidative stress markers in post-traumatic stress disorder: a systematic review and meta-analysis", a meta-analysis was carried out. In this method, a literature review is conducted to identify works to be included in the research, then, the obtained material is examined to provide more solid scientific evidence. After evaluating 54 studies with almost 9,000 patients with PTSD, the researchers did not find alterations in oxidative stress markers (markers that indicate whether there is an imbalance in the fight against free radicals).

However, the scientists identified that these people have alterations in three inflammatory markers: TNF alpha (tumor necrosis factor-α), interleukin 6 and C-reactive protein. According to the professor in charge of the study, these three markers are the primary causes of inflammation; hence, some of them will be altered in the case of autoimmune and inflammatory diseases. For example, TNF-alpha is frequently altered in lupus, a disease that has a higher incidence in patients with PTSD. Alteration of other markers, such as C-reactive protein, usually occurs in lupus as well. So, it is possible that these three markers will be altered in patients with inflammatory diseases.

> *"We observed that patients with post-traumatic stress disorder were aging at an accelerated rate. They had more cardiovascular diseases, heart attacks, strokes, and autoimmune diseases. We didn't know why, but now it's clear that they have an increase in inflammatory markers, a condition which explains the higher incidence of these clinical outcomes."*
> — *Ives Passos*

According to the professor, patients with PTSD give the impression of being up to 10 years older than their actual age, both in terms of appearance and biologically. The phenomenon known as accelerated aging might cause people to pass away earlier than the average life expectancy rates indicate. It occurs mainly in patients with more severe and/or untreated cases of psychiatric disorders.

When Ives started his residency in Psychiatry at the Hospital de Clínicas de Porto Alegre (HCPA), in 2011, a research group that studied biological markers was previously established. Their studies also included inflammatory markers of oxidative stress in the field of mood disorders. "At that time, we had already come to suspect that these markers might be altered in certain psychiatric illnesses. After that, I had already begun to analyze the inflammatory markers in post-traumatic stress and bipolar disorder in one of my Ph.D. articles. That are two psychiatric diseases that can get more severe", explains the professor.

Focus on treatment and further steps

The World Mental Health Report, released by the World Health Organization in June 2022, reveals that prior to the pandemic, in 2019, approximately 970 million people worldwide were living with some type of mental disorder. This number may have increased even more in recent years. Currently, patients diagnosed with post-traumatic stress disorder are treated with psychotherapy and antidepressant medications.

The expectation arising from this study is the development of new treatments using anti-inflammatories and immunomodulators to reduce the onset of cardiovascular events and aging acceleration. According to Ives, it is believed that, while antidepressant drugs do reduce anxiety symptoms caused by PTSD, these new strategies may have an impact on the additional diseases indicated by the markers. In addition, it is known that patients with the disorder may experience a loss of cognitive functions over time, situation which can also be influenced by inflammatory processes and that certainly deserves to be addressed in future research, according to Ives.

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Translated into English by ***Bianca Gomes Martins***, undergraduate student enrolled in the course "Supervised Translation Training II (English)" of the Undergraduate Program in Language and Literature, under the supervision and translation revision of Professor Elizamari R. Becker (P.h.D.).

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