Abstract

Post-traumatic stress disorder (PTSD) originally referred to conditions observed among military people. It was first widely accepted as a diagnosis during the First World War. As a result, PTSD was no longer attributed exclusively to the military environment and, at the moment, there are a large number of studies that relate to civilians who developed trauma as a result of a terrorist attack, rape, the death of a loved one, natural and man-made disasters.

Severe trauma can affect everyone, and most people manage to cope with stress and continue to live their everyday lives. However, some people may develop PTSD. A person diagnosed with PTSD may have sleep disorders and nightmares, increased irritability, feel guilty and look for the cause of problems in themselves, and may not experience positive emotions. Symptoms of PTSD have a destructive effect on the patient himself and affect loved ones, leading to a break in social ties and loss of work. PTSD is a complex disease affecting various regulatory systems of the body, but despite many studies, the aetiology of PTSD development is not clear today. This fact limits scientists in developing a treatment for PTSD.

One of the ways to develop research on the treatment of PTSD uses preclinical and clinical methods to track biomarkers associated with changes in the body after injury. The study of biomarkers will bring us closer to understanding the aetiology of PTSD, direct further pharmacological research for drug development, and allow us to identify risk groups of people, preventing the development of PTSD.

This thesis examines biomarkers and their research methods that can potentially help to understand the causes of PTSD. Scientists look at disorders from all possible angles, examining hundreds of different biomarkers. The format of this paper does not allow us to describe all the processes that occur in PTSD, so the paper describes the main biomarkers studied and methods for their study to get closer to understanding the processes behind PTSD.

The introductory part of the paper discusses the definition and impact of stress on the human body. For understanding the physiological processes that occur in response to stressors, the HPA axis is considered, followed by a description of the “Two-Hit” hypothesis, as a possible theory of the origin of PTSD. The second chapter examines the current definition of PTSD and the risk factors that contribute to the development of PTSD. The third chapter provides examples of preclinical and clinical methods for studying biomarkers related to memory and regulatory disorders. The fourth chapter describes the biomarkers studied. The fifth chapter describes the problems of research and conclusions.