

## Report on the Recovery of a Personality Problem in a Case with Borderline Personality Disorder after Head Trauma

M. Nasiri (MA)<sup>1</sup>, S.H. Hosseini (MD)\*<sup>2</sup>, S. Ehtashami (MD)<sup>3</sup>, S.M. Sakhaie (MD)<sup>4</sup>

1.Faculty of Educational Sciences and Psychology, Alzahra University, Tehran, I.R.Iran

2.Psychiatry and Behavioral Sciences Research Center, Addiction Institute, Mazandaran University of Medical Sciences, Sari, I.R.Iran

3.Department of Neurosurgery, Mazandaran University of Medical Sciences, Sari, I.R.Iran

4.Radiology Specialist, Sari, I.R.Iran

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### ABSTRACT

**BACKGROUND AND OBJECTIVE:** Borderline personality disorder which constantly changes the mood, identity and interpersonal relationship is a mental disorder classified in category B. Besides, it leads to behaviors such as drug abuse, impulsive sex and suicide which make more difficult the treatment of these patients. The aim of this study was to report the recovery of a personality problem in a case with borderline personality disorder after the head trauma.

**CASE REPORT:** The personality signs of a 28-year-old boy who had the full criteria of borderline personality disorder including drug abuse, impulsivity, mood instability, periods of anger and aggression were significantly decreased after hitting. Personality difference and improvement of patient were shown in MMPI test and MRI indicated the structural changes in his brain. He had no problem in 4-year-follow up.

**CONCLUSION:** This report suggested the personality and behavioral changes after head trauma. MRI results indicated that the recovery is probably caused by the destruction area in the frontal lobe and the anterior temporal lobe (near the hippocampus). Thus the importance of neuropsychological factors should be considered in creating the diagnostic criteria.

**KEY WORDS:** *Borderline personality disorder, Head trauma, Case Study.*

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\* Corresponding author: S.H. Hosseini (MD)

Address: Psychiatry and Behavioral Sciences Research Center, Addiction Institute, Mazandaran University of Medical Sciences, Sari, I.R.Iran

Tel: +98 33210315

E-mail: Hosseinish20@gmail.com

## Introduction

**B**orderline personality disorder is a complex mental illness characterized by multiple failures in interpersonal relationships, self-concept, and cognitive, emotional and behavioral actions. The characteristics of borderline personality disorder are the overwhelming and overwhelming instability of emotions, self-concept and interpersonal relationships as well as significant excitability.

Diagnostic criteria for DSM-IV-TR for borderline personality disorder include crazy attempts to prevent cracks, severe insecurity, emotional and self-concept, impulsivity and difficulty in controlling anger, self-mutilation, chronic emptiness, paranoid thoughts, and analytical symptoms (1).

Although the disorder is very devastating, studies about this disabling clinical disorder are very limited and more research is needed to understand and manage it (2-4). The prevalence of borderline personality disorder is estimated to be about 2% of the general population, 10% of outpatients of mental health clinics and 20% of psychiatric patients. Nearly half of the patients with mental disorders have personality disorder diagnosis, and in the clinical population with personality disorder, this disorder is seen in 30% to 60% of cases. The prevalence of this disorder is greater than other personality disorders (6, 5). This disorder begins in adolescence, reaches peak in adulthood and decreases in middle age (7).

People with this disorder have the most chronic symptoms of psychiatric and psychiatric pathology, which have not yet been fully effective treatment for them (8). Studies that investigate the pathology of borderline personality disorder have often emphasized environmental issues and childhood harassment. Among them, Kuo et al. Have shown that the frequency of children's emotional abuse is related exclusively to the severity of the symptoms of borderline personality disorder. This study showed that different forms of harassment, especially emotional abuse, have a growing impact on the pathology of borderline personality disorder (9). Carlson and colleagues also found that the confused / confused attachment style of the infant (18 months) and the immense stress of the family (3 to 42

months) are important predictors of borderline personality traits (10).

Therefore, the study of environmental factors in the ontology and treatment of patients with borderline personality disorder has always been emphasized. Although biological and structural factors play a role in the phenomenon of borderline symptoms, less studies have consistently been addressed its role in etiology and treatment borderline personality disorder. Among the studies, case studies have been conducted very rarely and there is a vacuum of research in this field. Considering that biological and structural factors contribute to the development and continuation of this disorder, the study of how this effect and its effect on the affected individuals can contribute to the improvement of therapeutic methods and improve the condition of these patients. Therefore, an improvement in borderline personality disorder after head injury is reported.

## Case Report

The patient is a 28-year-old man, married, a graduate student, and a second-degree son of the family, with his childhood characteristics such as slamming, incompatibility and extraversion of his prominent features. From the fifth grade, he begins to smoke and turns from second to cannabis, and after taking it, he reports a period of intense anger and aggression in the home and street stroke.

From the age of 17 he begins to consume opium and alcohol. Starting the military service begins to consume white materials. He also cited episodes of severe depression during this period, which has resulted in several unsuccessful attempted suicides. During this period, he temporarily quits three times, but after the military service he continues to mention the use of white materials, such as glass and crack. Three years after being recruited, she was traumatized and confused by an accident in an accident.

According to the patient's statements, when he arrives at the hospital, he is intelligent and resists against medical interventions that he attributes to the use of Hallucinogenic substances. The level of

consciousness of the patient reaches 3 after anesthesia, which lasted about 7 days in coma. Skull surgery was performed on him, and after a coma he was hospitalized for two months. He also mentions marijuana consumption occasionally during admission. According to the patient's statement, after a head injury, he was reluctant to use drugs and did not mention his pleasure. Also, mood changes are less aggressive, more intimate with family members, more stable and less irritable mood. It's shocking performance has dropped dramatically.

The patient came back to the addiction departures a few months after being hit, and although he was unsuccessful several times before the head injury, but the drug withdrawal after his head trauma has been successful. His last action was with the EN community. After withdrawal, he became representative of the members of NA community and was responsible for the guidance and supervision of the members. The patient

is also busy working in the promotion of job positions within several months. The patient is married after a while and has a very good relationship with his wife.

**The result of the MMPI test report after head trauma:** In the patient's narrative criteria, the profiles of individuals with positive and communicative attributes are presented. In the clinical criteria, the scores are average and common, and do not show significant upsets in the degree of disturbances. Understanding is a disorderly and insensitive to his problems.

**The result of the MRI report after head trauma:** Gliosis changes and Brain malacia are evident in the right frontal lobe and the anterior part of the temporal lobe (adjacent to the hippocampus), which causes a slight decrease in the volume of the brain as a mild and relative dilatation of the frontal horn and temporal left lateral ventricle . Present patient information with informed consent from him and with medical secrets.

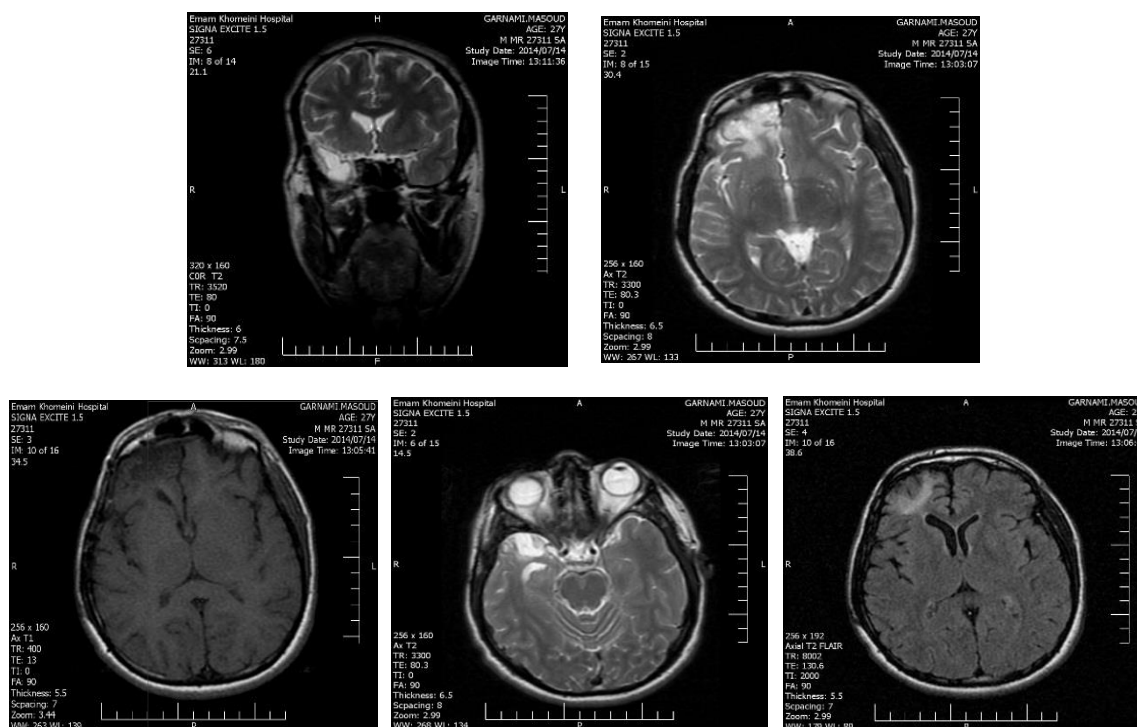


Figure 1. MRI

## Discussion

The evaluated patient in this study shows the post-head traumatic personality and behavioral pattern, which is probably due to the improvement of the frontal lobe area and the anterior temporal lobe (adjacent to the

hippocampus), according to the results of the MRI. Although more research is needed to conclude on the BPD etiology, current studies have shown that many genetic and biological factors are associated with the

risk of BPD formation. For example, based on studies on twins, families and adoptive children with BPD, and molecular studies in this area, it was found that the disorder is not purely genetic and has other effects (11). The results of the twenty family studies show that BPD is more likely to be inherited in families with one of their members with this disorder (12).

An increasing volume of researches support from the coexistence of functional brain disorders in the BPD (14, 13). Some studies have shown that the function of the frontal lobe, which plays a role in impulsive behavior, is often damaged in patients with BPD. For example, patients with BPD often perform poorly in neurological tests related to frontal lobe function. Additionally, the level of metabolism in glucose in their frontal lobe is low (15).

The frontal lobe seems to be the main source of brain performance or monitoring. However, the frontal lobe is not limited to controlling cognitive processes and is involved in consciousness and consciousness in terms of emotional responsiveness, social and personality development (16). Neural imaging studies have shown differences in the prefrontal cortex of borderline patients compared with healthy subjects. These differences are seen both in the baseline and in response to the annoying stimuli, as well as in the neurological investigations associated with impulsivity (17).

Also, some evidence from MRI studies suggest that the orbitofrontal cortex in patients with BPD has functional and structural disorder: excessive metabolism and smaller volume of orbitofrontal cortex (18), including these disorders in borderline patients. The damage to the orbitofrontal cortex is related to inappropriate behavior or socially disproportionate behaviors (19).

Because impulsivity and emotional instability are the main features of BPD, the results of Berlin and colleagues studies were divided into four groups: borderline patients, patients with orbitofrontal cortex lesion, patients with prefrontal cortex and healthy subjects, showed that two first group were similar in many scales compared to patients with prefrontal cortex and healthy subjects. In addition, both groups (borderline patients and patients with orbital ophthalmic

cortex lesions) were more aggressive, more anger, less joy and more disproportionate behaviors (20). Therefore, the poor functioning of the orbitofrontal cortex seems to play a major role in certain features of BPD (especially impulsivity and emotional instability). Also, in other studies, increased amygdala activity (high emotional justification), low serotonin levels (justifying impulsive and depressive behaviors), and increased testosterone levels (justifying the aggressiveness of BPD) (21).

In addition, some studies have reported the improvement of post-traumatic psychiatric disorders (22). Animal and human studies have shown that early life stress relates to changes in the structure of the hippocampus (which plays a fundamental role in learning, memory and stress management). Reductions in the size of the hippocampus and amygdala in borderline patients have also been reported frequently, including Sla et al., showed that the size of the hippocampus in patients with BPD, especially those with a history of childhood harassment, is significantly smaller than normal individuals. Their study also confirmed the correlation between the size of the hippocampus and the intensity of hostility in border patients (23).

Schmahl et al. demonstrated that in borderline patients with childhood abusive history, the size of the hippocampus, 13% and amygdala size, decreased by 21% (24). The role of the orbitofrontal cortex in impulsivity and emotional instability and the role of the hippocampus in emotional regulation has been emphasized in numerous studies, given that emotional instability, in the sense of emotional weakness and impulse control, are the main problems of patients with borderline personality disorder.

Therefore, poor functioning of the orbitofrontal cortex and reduction of the size of the hippocampus can be considered as an effective factor in the emergence of diagnostic criteria for borderline personality disorder, as the findings of previous research have been consistent with the finding of this study, so that in the study of right frontal lobe destruction and also the anterior temporal lobe (Adjacent to the hippocampus), it can be considered as one of the hypothesized reasons for the

improvement of the patient's diagnostic symptoms. Therefore, the importance of neurophysiological factors in the emergence of diagnostic criteria is considered.

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