

## Posttraumatic Severe Chronic Headache: An Adolescent with Postconcussion Syndrome

### *Travma Sonrası Süreğen Şiddetli Başağrısı: Postkonküzyon Sendromlu Bir Ergen*

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#### ABSTRACT

Post-concussion syndrome (PCS), apart from occurring in the wake of mild traumatic brain injuries (TBIs) in general, may also occur as the result of moderate TBIs. PCS patients may exhibit symptoms of physical, psychiatric (emotional and behavioral) and cognitive inabilities. Patients, except for the 10%, make a full recovery between 3-6 months. While patients with PCS show vitally acute symptoms at the outset, the clinical recovery is dramatically good. A fifteen-year-old female patient who had undergone a head trauma as the result of falling down from height showed a clinically dramatic recovery after an 18-day-treatment of intensive care.

We aimed to draw the attention to the association between the psychiatric findings that appeared to be likely to be associated with negative life events and the clinical picture of a post-traumatic severe headache resistant to treatment. This clinical picture, when dealt with the holistic multidisciplinary approach, may indicate PCS to us.

**Key words:** Headache, postconcussion syndrome, trauma

#### INTRODUCTION

Post-Concussion Syndrome (PCS- Post-Concussion Syndrome) is a syndrome that develops in the wake of a mild traumatic brain trauma (MTBI), causing cognitive and social hardships along with psychiatric symptoms as well as physical findings. Following the head trauma, the fact that Glasgow Coma Score (GCS) was ranked between 13-15, that a short period of loss of consciousness less than half an hour and a short period of amnesia less than an hour were

#### ÖZET

Postkonküzyon sendromu (PKS) genellikle hafif şiddette kafa travmaları sonrası oluşmakla birlikte orta şiddette kafa travmaları sonucu da oluşabilir. PKS, fiziksel, psikiyatrik (duygusal ve davranışsal) ve bilişsel yetersizlik belirtileri gösterebilmekte ve bu hastalar 3-6 ay arasında %10'u hariç tamamen iyileşmektedir. PKS'li hastalar, başlangıçta hayati olarak ağır belirtiler göstermekte iken trajik bir şekilde iyileşmektedirler. Yüksekten düşme sonucu kafa travması yaşayan, 18 gün yoğun bakım tedavisi alan ve dramatik iyileşme belirtileri gösteren olguyu paylaşmadaki amacımız; olumsuz hayat olayları ile ilişkilendirilebilecek gibi görünen psikiyatrik bulguların ve travma sonrası şiddetli ve tedaviye dirençli başağrısı tablosunun bütüncül olarak ele alındığında aslında PKS'nin bileşenleri olabileceği durumuna dikkat çekmektir.

**Anahtar kelimeler:** Başağrısı, postkonküzyon sendromu, travma

experienced led to a decision that the head trauma in question was a mild traumatic one [1].

In this case that occurs after MTBI, no symptom is left in 90% of the patients within 3-6 months [2]. PCS, which does not heal at the end of 3 months, is known as progressive PCS, which comprises 10% of all the patients [3]. PCS is a common social health problem with the incidence of 38% to 80% after a mild traumatic brain injuries [4].

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Its most frequent physical symptom is the unceasing headache. Sleeping disorders (difficulty in falling asleep, interruption of sleep, sleeping either excessively or very little) and fatigue are the most common symptoms accompanying the headache [5]. In establishing PCS diagnosis, the diagnosis in question is performed according to the complaints of the patient since it is non-objective method [6]. Besides, during the diagnosis, there are diagnostic criteria, such as DSM-IV and ICD-10 (International Classification of Diseases) [7,8].

In PCS are physical, psychiatric and cognitive symptoms seen. The physical symptoms seen in PCS are headache, dizziness, fatigue, susceptibility to light and sound, tinnitus (ringing in the ears), blurred vision, sleeplessness (insomnia) and diminished taste and smell perception. In the set of psychiatric symptoms, on the other hand, are depression, anxiety, restlessness, apathy and variability in emotions and senses. Cognitive symptoms, however, are alleviation in attention and concentration, absent-mindedness, difficulty in learning and data processing as well as amnesia (memory loss) [4].

Our objective in sharing the case who had experienced a head trauma as the result of falling from height is to draw the attention to the fact that when the clinical picture of the post-traumatic severe headache resistant to treatment as well as the psychiatric findings that seem to be likely to be associated with other negative life events are tackled holistically, this clinical picture could actually be the components of PCS.

## CASE REPORT

### Urgent Application and Neurological Evaluation

It was learnt that a fifteen-year-old female patient had fallen from the fourth floor of her apartment due to an unknown reason while all alone at home in January, 2013. There was no pathology in her neurological examination evaluated apart from the minimal loss of muscular strength in her left lower extremity. The patient's seizures that had developed at the time of her hospitalization in the intensive care unit were brought under control by administering Levetiracetam and Carbamazepine. It was learnt that the patient followed up in the intensive care unit for 18 days had showed distorted orienta-

tion, that no cooperation could be made with her, that she exhibited sort of pointless, weird behaviour when observed from outside, that she was unable to eat anything by herself and that she was tetraparetic and confined to bed during her examination at the time of her transfer from the intensive care unit to the service.

It was informed that her condition in question had lasted for 3-4 months following the trauma and that she had only begun to remember her mother after the 4<sup>th</sup> month. The GCS score of the patient during her application for urgent consultation to the child psychiatry in March, 2013 was 14, and her consciousness was blurred and in a confused state.

During her clinical follow-up, the patient, whose GCS score dropped down to 8 with the worsening of her consciousness in time was taken from the pediatric intensive care unit, after which her follow-up was continued. In the patient's cranial MRI that was shot, a contusion in her right frontotemporal region, infarct areas in her right parieto-temporal region, and a diffuse axonal damage in corpus callosum and hippocampus were determined along with a concordant involvement. The LP result performed due to the patient's fever was evaluated in accordance with the posttraumatic meningitis, and then the antibiotic treatment was started on. After the 4<sup>th</sup> month, the patient started to re-acquire her talents acquired by her prior to the trauma. Later on, it was observed that the 6<sup>th</sup> neurological examination of the patient who re-acquired her motor strength and cognitive functions in time through physiotherapy and special training totally returned to normal. The anti-epileptic of the patient whose EEG was determined to be normal were started to be reduced gradually. A year after she had fallen from height, she was monitored closely by the department of child psychiatry with the complaints of severe headache in her frontal and occipital regions, hypersomnia (excessive sleeping), fatigue and ill temper despite the fact that her neurological picture had returned to normal.

### Psychiatric Evaluation

In the psychiatric medical record was no delay in the patient's developmental stages, nor was there any other trauma or operation in her medical record. She was not diagnosed with any chronic disease prior to her trauma, either. Separately, in the pa-

tient's post-traumatic background mentioned, she had described headaches in her frontal region that used to pass off through analgesics and sleep during her stressful periods. There was no characteristic in the patient's family history.

She used to be a successful student at school prior to the trauma she went through; however, she showed cognitive symptoms, such as incapability of paying attention to her lessons, learning with difficulty and failure in her lessons, later on. Following the second application to the department of child psychology, which was performed for this reason, her condition was determined to be in concordance with a mild mental retardation found as the result of the mental evaluation referred to as Wechsler Intelligence Scale for Children-Revised (WISC-R) in May, 2013.

The patient in question had been suffering from a headache in her frontal and occipital regions that continued increasing more severely than ever all day long for almost a month, leading to excessive sleep hours and never responding to analgesics. She developed a tendency to sleeping for more hours due to pain and stated that she had been spending almost %75 of the day in sleep.

In the final psychiatric evaluation of the patient, her consciousness was seen to be open and cooperative, and her orientation was complete. Apart from her features like dysphoric and depressive mood, her anxious and restless expressions were prominent. She was willing to have a verbal communication, and she answered the questions with the sentences serving their purpose. Throughout the interview, she exhibited aggressive and opposed behaviors towards her mother. Within her thought content, she had intense thoughts as to developing the meningitis disease over again, which, she assumed, was the reason for her falling from height. Her psychomotor activity was slow. Her sleeping problems continued as it was told before. She stated that she recently had poor appetite, yet she lost no weight. She had no apparent fear, obsession or tic disorder, nor was there any identification as regards illusions or hallucinations, nor any psychotic symptoms. She did not talk about any of her considerations as to causing harm to herself or others. Her reality testing was complete, and she had an insight about her ailment. In the second assessment that was performed

in March 2014, IQ score of Wechsler Intelligence Scale for Children-Revised (WISC-R) was in normal interval.

Our case told us that she had fallen down from the fourth floor due to something, the cause of which she did not know. During the examinations performed in the wake of the trauma, no organic pathology to describe her loss of consciousness was determined. During the interviews performed upon the return of the patient's consciousness, no identification with respect to pre-traumatic depressive symptoms was seen; moreover, she reported that the event in question did not occur for self-harming purposes. Owing to the fact that she might have been unable to provide any clear information regarding her condition due to the amnesia likely to have occurred because of the head trauma she experienced, the patient's thoughts over causing self-harm were brought forward during the interview.

On account of the fact that the neurological examination performed in the post-traumatic 1st year as well as the radiological findings of the patient were normal, that there was no other clinical condition to describe her current complaints, and that there were physical symptoms like post-traumatic headache, fatigue and sleep problems as well as cognitive symptoms like incapability of focusing on the lessons and difficulty in data processing and psychiatric symptoms like nervousness, restlessness and depressive findings, the result of the diagnosis was considered as PCS, and the patient received consultancy and psychoeducation after having been provided with an informative explanation about her medical condition.

## DISCUSSION

Brain injuries are analyzed in three classes as mild, moderate and severe according to Glasgow Coma Scale (GCS), the duration of the loss of consciousness and the duration of amnesia [4]. In the Glasgow Coma Scale (GCS), which provides objective data for head traumas, 3 functions are mainly evaluated such as eye opening, verbal and motor responses in order to determine the cerebral functions and the severity of coma [9].

GCS was 14 in the first evaluation of our case in the emergency department of the hospital and was

also in accordance with the mild traumatic brain injuries (MTBI). In the literature, MTBI is regarded as the type of head trauma leading to PCS [2,3,10], yet, it is also reported that PCS could develop in the wake of moderate TBIs, as well [11].

Diffuse (prevalent) axonal damage is the most commonly-seen post-traumatic pathological change. Although the diffuse axonal damage may be seen in the wake of all types of head traumas, the only pathological change in MTBI can be the prevalent axonal damage [12]. In the post-mortem studies performed on the individuals with unceasing post-traumatic headache, the prevalent axonal damage was also put forward besides other pathological findings [13]. Also in the MR imaging performed after the trauma that our patient had developed, a finding as to the diffuse axonal damage was put forward.

In the patient's clinical picture, one of the definitive diagnoses to occur in mind is the Organic Brain Syndrome (OBS). It becomes known when there is at least one symptom out of the symptoms of aphasia, apraxia, agnosia along with the memory impairment as well as the impairment in administrative functions (8). According to medical record, physical and laboratory findings, there is evidence that this impairment is the direct physiological consequence of any medical condition. These disorders do not merely emerge during the course of delirium. However, the fact that the patient had a medical record on falling from height and that no problem was identified in her premorbid features in terms of her cognitive functions have been eliminative.

In PCS clinics, the post-traumatic stress disorder (PTSD) is frequently encountered. PTSD is a disorder that emerges in the wake of intensely traumatic events, such as an actual death or death threat, serious injury, confronting a situation that threatens the physical integrity of an individual or witnessing such an incident, or that shows itself along with specific symptoms, such as experiencing the traumatic event over and over, avoiding the stimulants that remind the individual of the event in question as well as being in an increased stimulated state [7]. There may be sleep disorders, nervousness, bursts of anger and lack of concentration in PTSD; yet, there is no emphasis made on the symptom of a headache

[14]. Separately, our case did not demonstrate the symptoms, such as experiencing the traumatic event in question over and over, keeping away from the stimulants that remind the individual of the event experienced, or being in an increased stimulated state, which were the symptoms we had expected to see in PTSD.

In PCS treatment, our target is to minimize the intensity of the stress that occurs due to a trauma as well as the post-traumatic symptoms through training, support and trust [15]. First of all, the patient must be informed about her/his condition and the symptoms likely to develop [16]. There are conducted studies as to the fact that providing the patient with education and trust helps those involved in the treatment process [17]. In the event that the incidence of headaches is observed to last for more than three days a week, the prophylactic treatment should be started on. For the frequently-seen and unceasing headaches in these patients, prophylactic migraine medications, such as amitriptyline, topiramate, valproic acid, propranolol and verapamil can be preferred [18]. The medications to be preferred in the first place for the depression treatment, one of the most common psychiatric symptoms in PCS, are selective serotonin reuptake inhibitors (SSRI), particularly sertraline (25-150 mg/day) and citalopram (20-50 mg/day) [19-21].

It is mentioned that there are also studies reporting that the sertraline treatment in the patients with PCS is good for headache, fatigue and sleep problems, also enhancing the post-traumatic psycho-social functionality [6]. Additionally, it has been reported that cognitive therapy and individual psychotherapy are of use in the treatment of depression [22]. It was also put forward in the studies that methylphenidate (0.25-1.30 mg/kg/twice a day), the firstly preferred medication in the treatment of Attention Deficit Hyperactivity Disorder (ADHD), had a positive effect on PCS symptoms, such as depressive symptoms, neurological findings, attention deficit and the speed of cognitive processing [19,23].

Due to the fact that the patient's treatment and follow-up were performed in another center for child mental health, we made our suggestions to the involved center.

In conclusion; apart from the fact that PCS is frequently seen, the diagnosis of the patient in question went unnoticed despite the fact that she was in her follow-up period, and a year after the event was the diagnosis of PCS established. Patients can apply to pediatric polyclinics, departments of neurology and psychiatry polyclinics with various complaints. Here, the task to be fulfilled by the clinicians is to question the symptoms of PCS in the patients having medical records on MTBI or moderate TBI, and particularly in the presence of the complaints of unceasing headaches.

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