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**IDENTITY LOSS AND COGNITIVE RESTRUCTURATION  
ON PATIENTS WITH POST-TRAUMATIC CEREBRAL  
DISORDER**

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*Abstract*

Motivation: temporal-occipital contusion resulting intracerebral hematoma, having as a psychiatric symptomatology post-traumatic dementia, it is a challenge for any therapeutic team. It is necessary to coordinate pharmacological and psychological intervention Objectives: the differentiation and isolation of psychiatric symptoms from the neurological ones, in order to reduce the psychiatric manifestation, increasing global functioning and preventing the suicide risk. Questions: is permanent cognitive stimulation an important part of the rehabilitation process and will it improve the therapeutic results, by a better compliance, also getting the insight over the issue? Method: prolonged admission, clinical interview, psychological tests (PANSS, BPRS, GAFS, life quality scale), observation. Computerized EEG, brain MRI, psychiatric interview, daily monitoring of the developments during treatment, life mapping, heteroanamnesis, psychological tests, participation in occupational therapy and psychoeducation during a prolonged hospitalization. Results: following administration of medication – neurological and psychiatric, along with daily psychological intervention, the psychiatric symptoms are considerably reduced. Posttraumatic psychiatric sequelae are minor, fully integrated; global functionality is close to the one prior to the head trauma. Conclusions: coordination and collaboration between pharmacological and psychological intervention were essential for the rehabilitation of posttraumatic symptoms. Family and social support brings also an important contribution regarding post-hospitalization rehabilitation program.

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**Keywords:** Head trauma, posttraumatic dementia, psychological intervention.



## 1. Introduction

Cranio-cerebral trauma is one of the most complex aggressions the human body can suffer, because of implications and manifestations both at a somatic level and at the psychic and cognitive levels (Tindall, Patton, Dunion, & O'Brien, 1975).

The patient suffered the trauma following a road accident, also resulting in her husband's death. The emergency intervention was made in an EAU (Emergency Admission Unit), being subsequently transferred for additional investigations in a neurosurgery section, having as diagnosis right temporo-occipital intraparenchymatous hematoma in remission.

She was subsequently discharged under family monitoring, following to continue her treatment in outpatient health care facilities. The evolution at domicile was unfavourable, becoming confuse, being incapable to self-care and to maintain a minimum hygiene, she presented confabulations and qualitative and quantitative changes of the mnemonic process, as well as qualitative and quantitative changes at perceptual level, the decision to hospitalize her in the psychiatry section, with suspicion of posttraumatic dementia was made.

Upon hospitalization, patient's symptomatology was preserved, her permanent monitoring by the medical staff being necessary, presenting self-harm risk on the background of confusion state and changes at the perceptual level (visual hallucinations).

## 2. Problem Statement

Remarks upon hospitalization:

Patient of 52 years old, messy outfit, disinhibited, trivial language, time and space, and self and allpsychically disoriented, difficultly cooperating, suspicious, irritable and irascible. The initial therapeutic alliance is established difficultly, both with the physician, and with the rest of the medical staff. (Gorgan, 2008)

From her hetero-anamnesis, it results that she graduated higher education, she works on a management position, and she is widow following the accident. The patient does not know that her husband is dead, she is at her second marriage, and she has a major child. Upon hospitalization, she has a subdural hematoma of approximately 3/4 cm, with edema area.

Psychic examination upon hospitalization:

Perception: she has visual hallucinations with attitudinal implication and interaction with the productions of her unconscious: "Why are those bitches walking thereabout?", "They are wasting all their time walking in front of the door! They don't have anything better to do?"

Thought: accelerated ideoverbal rhythm, destructured speech up to the phrase level, flight of ideas, associations are made randomly, per superficial aspects, attention lability, accentuation of evocations, digressions, tangential answers (Jennett & Bond, 1975). The concentration capacity is low, the capacity to comprehend simple notions is low; she cannot perform simple tasks (she cannot eat alone). Automatic, superficial associations: "Money are not made this way, I get you out on the street". Circumstantial associations. Delusional grandeur and increase ideas related to the workplace and social status. (Krumhuber, Kappas, & Manstead, 2013)

Attention: spontaneous and voluntary hypoprosia, as well as low concentration capacity, stability and attention distribution.

Memory: the patient has various disorders of the mnemonic process: anterograde and retrograde amnesia, with difficulties in evoking both recent events (forgets the medical staff), as well as older, from life history; lacunar amnesia - does not remember the accident.

Affectivity: expansive mood, irritability and irascibility, affective indifference.

Instinctual life: incapacity of self-care, and to maintain the personal hygiene, professional incapacity, incapacity to fulfil the easiest requirements.

Circadian rhythm: changed - mixed insomnia. At present - sleeping induced by drugs.

Behavioural disorders: food appetite disorder (eats only being fed by the medical staff); behavioral disorders – hetero-aggressiveness; walking disorders (she cannot walk, as psychic response to stress, even after somatic disorders' healing at the level of lower limbs); she does not present neurological changes affecting her movement capacity.

Disease consciousness: she does not have the disease consciousness.

Diagnosis upon hospitalization

Ist axis – Posttraumatic dementia

- hallucinations
- anhedonia
- superficial associations
- antero and retrograde amnesia
- lacunar amnesia
- eating and circadian rhythm disorders
- behavioural disorders in agreement with delusional ideation
- affective indifference
- attention disorders

IIInd axis – destructured personality on organic and psychotic background.

IIIrd axis – subdural hematoma of approximately 3/4 cm on the edema area

IVth axis – the patient has the emotional and material support of her family, its direct involvement into the therapeutic process

Vth axis – GAFS – 20, inability to function in the majority of life aspects (American Psychiatric Association, 2013).

### **3. Research Questions**

The question arises of the recoverability of the neuro-behavioural syndromes which, on the one hand, imply neuro-psychiatric symptoms, and on the other, deficit disorders. The latter category includes the patient's aphasia, memory disorders, neglect, anxiety and Wernicke-type aphasia in which fluency is affected, assuming difficult comprehension, repetition of words, anomie (abnormal naming of objects), disturbed reading comprehension, writing with paraphrase, writing. We want to see to what extent neurocognitive recovery techniques (psychological training on complex psychic functions of planning,

sequencing, retroactive control), can influence the recoverability of the injury determined by TBI (Traumatic Brain Injury) in the postero-superior left temporal gyrus.

As techniques used for neurocognitive recovery were the consistent repetition with emphasis on the acquisition of production, the fluency of speech, the correction of abnormalities in the name of objects, reading aloud doubled in writing. It started with the spontaneous language, gradually moving towards the elaborate language. Gradually the patient's understanding became possible by diminishing the paraphysical errors of phonemic type in writing (the errors like neologisms were corrected).

The study posed the problem in determining which neuropsychological tests target the arcuate fasciculus lesion that crosses the Wernicke area to the Broca area.

#### **4. Purpose of the Study**

We have proposed the correction of the following syndromes by neuro-psychological techniques:

- amnesic syndrome. At the beginning of the hospitalization, the patient was unable to store new information for later reproduction, as well as the inability to remember previously stored information, as long as his consciousness became clear. Antero-retro-grade amnesia predominated which also involved lesions in the limbic structures (hippocampus, fornix, mammary bodies, medial thalamus nuclei).

- frontal lobe syndrome: which has been characterized by disinhibition, uncontrollable euphoria, inappropriate jokes, familiarity, intrusive social behaviour, inability to plan, irritable and lax disposition, inability to anticipate. The patient presented at the beginning of the psychological therapy the lack of initiative and motivation, apathy, limited gesture, perseverance, persistence (abnormal early termination of activity), deficiency in the sequential programming of the motor acts, disturbances of the capacity of judgment, concrete thinking in the abstraction tests.

Another dimension approached through psychological therapy (neuro-cognitive recovery tests and ergotherapy activities) addressed negation and anosognosis. This implies the inattention and ignoring of a hemiuniverse predominant on the way of visual manifestation.

Among the neuro-psychiatric syndromes, we note the hospitalization; the presence of hallucinations and delusional ideas with satellite psychotic anxiety, with mixed type changes of disposition and personality alteration, the psychiatric area being approached with a combination of SSRI-type antidepressant activator, along with antipsychotic aimed at clarifying the field for the conscious and trophic brain reconstruction of new functional circuits that take over the remaining cognitive potential and facilitate access to long-term memory.

#### **5. Research Methods**

Examination of the present psychic state:

Remarks: The patient is conscious and cooperating, tranquil from a psycho-motor point of view, with a hypomobile facial expression of beatitude (in the absence of an adequate stimulus) and fixed gaze. He is oriented to time and space, auto- and allo-psychically. His posture is neat, with preserved hygiene. The speech is slightly incoherent, tachyphemia is noticed, with jerky voice. Psycho-verbal contact is achieved easily. Throughout the medical interview, the patient keeps tightly in his hands an icon.

Perceptions: From the sphere of quantitative disorders, we identify a hyperesthesia focused on tactile sensorial register. From the sphere of perception, the following are recorded as qualitative disorders:

- imperative auditory hallucinations: “It told me that I must go to church. The voice was telling me: Throw the key and go to church! I believe it was God and he was sending me there for my sins.”;
- pseudo-hallucinations: “The voice was as an inner process for my sins”

Attention: Voluntary hypoprosexia is acknowledged, with spontaneous hyperprosexia, insufficient functioning of attention filter, difficulties of concentration, stability and selectivity of attention.

Memory: A selective hypermnesia is present, with extraction of certain data, facts and events integrated in an interpretatively delusional way. The patient fixes and retains elements that present a “significance” that contributes to the augmentation of his delirium: “I bought a bulb from the internet. I was very cold and there was written that the bulb cleans the air within the room, and it is beneficial for breathing. I felt my teeth are drying [...] I could not leave the house. I was feeling more and more the heat on my skin.”

Thinking: Analysing the central cognitive function of psychic life, we acknowledge both quantitative disorganisation disorders, and qualitative ones, subsuming psychotic thinking. The ideo-verbal flow is accelerated, with flight of ideas and speech sliding, which is focused on marking content (professional failure, abortions of his former life partner), intercalating sometimes with hypermnesia for non-significant details and incapacity to differentiate the general essential. Weakening of logical associations is noticed, with sliding from one real plane to the metaphorical one. We also note the existence of circumstantial discourse and tangential responses (to the question: “How did you reach to the psychiatry hospital” the patient answers: “The symptoms continued until July. A friend recommended me a psychiatrist to be able to sleep”).

In addition to quantitative thinking disorders, we also draw the attention of the qualitative ones:

- delusional ideation of follow-up, persecution, and damage, carried out on the background of a basal suspicion: “In Denmark, one shall find out of my failure in Romania. And when one shall hear there on my trial, nobody will employ me”, “I feel followed-up.”

- mystical delusional ideation: “At church, during the last years, I was praying only for others, because I did not consider myself important. I was saying the names of the persons I know and after that I was praying for all beings on Earth. I felt better during praying.”, “I pray 6-7 times a day.”

- delusional guilt ideation: “I have two children with whom I am not in a relationship because my girlfriend underwent abortion when I was 18-19 years old. I feel guilty because I didn’t even care.”

- somatic delirium: “My physical pain started because of the ultraviolet bulb... I felt my teeth are drying. I slept with it and when I woke up I had the eyes swollen, I was red on my throat and on my face, I was a little tanned.”

- delusional interpretativity: “At the conference of Denmark, I had the impression it is spoken about me”

- ideation of xenopathic control: “It told me I must go to church. I was told: Go there. Throw the key and go to church! I believe it was God, who was sending me to Church for my sins.”.

**Affectivity:** Patient's mood is marked by anguish with psychotic roots, described by the person in question as "a triggering of panic, fear, anxiety". Affective flattening is acknowledged, with hypomobile facies and reduction of body language (Trifu, Mihailescu, Stegarescu, & Ion, 2016).

**Activity:** He presents low useful yield: "I could not leave the house", and throughout the last years he did not carry out any socially useful activity because, wanting to stabilise in Denmark, he learnt the language and he was permanently in contact with an adviser who had as purpose to facilitate his social-professional integration in the environment from there. He asserts that loneliness and the lack of a job affected him significantly, this being the reason for which he accepted for a while to carry out an activity below his academic training.

**Behaviour:** He is psychotically changed (the patient keeps an icon in his hands as "anchor" and he assert he prays 6-7 times a day). He is unpredictable, instable, with dromomania tendencies.

**Instinctual life:** he presents food appetite disorder and low preoccupations for erotic life: "I had sexual relationships at the beginning, but it did not seem normal how they were running, so that I renounced three year ago. It seems normally to me this way, not to have intimate relationships until marriage."

**Circadian rhythm:** He complains of mixed insomnias, sleeping interrupted by nightmares.

**Personality:** A bizarre aspect of personality can be noticed, suggesting that the patient faced a psychotic process (Trifu, Delcuescu, & Boer, 2012).

**Insight:** Partially preserved.

**Feelings induced in counter transfer:** He suggests grandiosity (involving both grandeur and narcissism, narcissist – paranoid area in which patient functioning carries out at present)

## **6. Findings**

In the first hospitalization day, the patient has an episode of loss of consciousness, followed by a period with confusion state and visual hallucinations (Ekman, 2011). Episodes of retro and anterograde amnesia, accompanied by strong memories from youth and confabulations by which she tries to fill the memory lacunas (Gabbard, 2007).

Mood stabilizer treatment is initiated (for the prevention of the future episodes of loss of consciousness), neurotropic, antipyretic, anti-inflammatory, vitamin-therapy (especially the vitamins B1 and B6), perfusable solutions (Sadock, Sadock, & Ruiz, 2009).

Concomitantly with the drug treatment, there are initiated the daily psychological interventions, physical exercises view a view to recover patient's motility, as well as the recovery of self-care and personal hygiene maintenance functions.

During the first hospitalization days, the patient accepts to collaborate only with certain persons of the medical staff. The mood is expansive, psychotic changed behaviour because of persistent visual hallucinations, vulgar and trivial language, she cannot feed alone, she does not maintain her hygiene, she does not ask to go to bathroom (Geeraerts & Menon, 2010). The speech is destructured at the phrase level; the life story is not fluent and consistent. The patient was not informed that her husband died in the accident because she did not remember she had remarried.

One tries the stimulation by repeated questions on the life history, one asks her opinions on minor aspects, she is gradually confronted with the real life history, she is raised from her bed by the medical staff and helped to walk.

In the second week, the same procedures are continued, the patient is further confused, she has confabulations on the amnesia background. Toward the end of the second week, she starts to have short moments of consciousness, investigating why she is in the hospital and asking the psychologist the purpose of daily asking the same questions (Cushing, 1908). At the same time, she manages to recall the majority of the medical staff (name and position), especially the attending physician, the psychologist, some of the nurses and health care assistants.

If she was suspicious and opposed to the psychological and physical interventions, at the beginning of hospitalization, along with the increase of consciousness degree, the treatment compliance degree increased, and therapeutic alliance improved (Greenberg, 2001).

Throughout the entire period, the family tried to be as closer as possible to the patient, playing an active role in the recovery process, their interventions being made at the greatest extent upon the indications of the attending physician.

Approximately two weeks after hospitalization, a brain CT control examination is performed, upon the indication of the neurosurgeon, to monitor the evolution of the hematoma and the cerebral edema area. Its significant reduction is acknowledged to 11/12 mm and the limitation of the edema area. The favourable evolution is also highlighted by the general condition of the patient, who is partially auto- and allopsychically -oriented, without visual hallucinations. At this moment, the family decided to inform her on her husband's death, information that the patient cannot integrate correctly: "I have understood that he died, but I don't feel he died, I expect him to come."

After approximately two weeks, psychological evaluation is attempted, the patient being relatively cooperating. Psychometric tests application is wanted, which she cannot complete, but she can answer coherently to Luscher color test:

Behaviour dictated by desired objects:

She wants to make a favourable impression and to be regarded as a personality. That is why she constantly seeks to see if she has success in this respect, and she is interested in the way the others react in front of her. This makes her feel important. She uses intelligent tactics to obtain influences and special recognition. She is susceptible to aesthetic and original. (Marshall, Gautille, & Klauber, 1991)

Behaviour appropriate to the existing situation:

She is active, restless, and always ready to go. She feels frustrated by the slowness by which feelings are developed, through the ways she wants. The fact goes to irritability, change and lack of persistence as regards following a given objective (Piek et al., 1992).

Refrained characteristics/behaviour inappropriate to the existing situation:

Capable to obtain satisfaction from activities, but she is inclined to confine, to withdraw emotionally, which prevents her from a profound participation.

Rejected or repressed characteristics/anxiety-charged characteristics:

She wants to exceed her own feeling of void and separation from others. She considers that life has many things to offer her. She feels she can lose a part of her feelings, if she does not manage to use at

maximum any possibility being offered to her. She considers herself as being fully competent in any field in which she engages and, sometimes, others can consider her unpredictable, getting involved too much in everything (Connoly, McKhann, Huang, & Choudhri, 2002).

Current problem/behaviour determined by stress:

She feels she can be prevented from obtaining the things she wants and, therefore, asks that others recognize her rights.

Lusher's elective projection confirms and highlights the patient's personality traits at the hospitalization moment: affective indifference, verbally and behaviourally disinhibition, grandeur ideation, narcissist preoccupations (Chan, Dearden, Miller, Andrews, & Midgley, 1993).

During the last hospitalization week, she has initiative spirit as regards time: she asks for discussions with the attending physician, with the psychologist, participates to ergotherapy groups. The disease consciousness degree increased, but she is affected by the mnesic level problems. She suffers of lacunar amnesia to a significantly lower degree than upon hospitalization, it being limited to the period between the day prior to the accident and the second week of psychiatry hospitalization (approximately one month and a half).

She is discharged under her family care, following the outpatient health care facility treatment and being monitored periodically by the psychiatrist.

The therapeutic alliance created with the attending physician goes up to requesting the consultations by the patient, to adjust the treatment and to understand the trauma. She asks for information related to TCC (craniocerebral trauma) and its consequences, as well as on the reasons of her hospitalization in a psychiatry section.

Domicile monitoring continues for a period of approximately three months after discharge, with the following recommendations: continuation of the treatment, confrontation with the reality of her husband's death by visiting her marital domicile (at present she lives at her daughter) and going to the tomb. The patient observed all the recommendations, offering by her own initiative feedback on her feelings.

After three months, she resumes her professional activity, initially on a part-time basis, and after approximately two weeks, she is re-employed on a full-time basis. Resuming her professional activity, she comes back to her domicile. The lacunar amnesia is also preserved after the discharge from psychiatry section.

The recommendations are the following: prohibition of consumption of exciting substances, starting a psychotherapy program, for the integration of the trauma and resolution of the mourning problems. Psychiatrically, she does not have pathological disorders anymore, in most of the psychic processes, excepting the mnesic process that is still affected.

## **7. Conclusion**

At the beginning of the hospitalization he presented a delirious syndrome of organic cause that did not constitute a reaction to the cognitive decline. Although there were cognitive dysfunctions, they were addressed through specific psychological training, language memory deficits and attention were overcome by cognitive training and delirium that associated hallucinations and content similar to non-organic psychoses was pharmacologically addressed. The one-sided injury caused by the particular localization of



the hematoma dictated the specificity of delirium and the characteristic of a peduncular hallucinosis (visceral hallucinations lasting for several days) accompanied by sleep disorders. These were short, stereotyped, clear, well-formed, like micropsia, macropsia or metamorphopsia.

The injury of the frontal-subcortical circuits raised the problem of suicide risk despite the dispositional changes that were mostly of a mixed type. The risk of suicide was enhanced by the increased satellite anxiety (the patient having only partially the consciousness of the accident he went through) as well as due to the association of the transient psychomotor retardation caused by TBI. This was the reason why the administration of Sertraline was considered by election to reduce the mechanism of defence of the dissociation and to put the patient in contact with those that happened.

The consequences of TBI in this case were: sudden passing from laughter to pathological crying, apathy, indifference, denial, anosognosia, prosody and neglect. The changes encompassed the entire psychopathological spectrum: cognitive, affective, psychotic, somatic, personality changes and diffuse anxiety. Initially there was a period of delirium, then a transient amnesia disorder, fortunately without evolution towards dementia (due to the rapidly established neuro-cognitive recovery techniques). Chronologically, in the first days of the hospitalization, the psychotic disorder characterized by hallucinations with false recognitions of *deja-vue* phenomena alongside delirium with persecutory content and generalized satellite anxiety predominated, then passing through the affective disorders with mixed elements and personality changes - which brought together elements of lability with apathy, aggression and disinhibition. Female gender, middle age, high socio-economic level and absence of substance use were positive predictive factors. Acute complications of TBI such as cerebral oedema, intracranial infections, or prolonged post-contusion symptoms were avoided. Dynamic CTs performed support hematoma remission. Neurovegetative disorders (tachycardia, hypertension, diaphoresis, sleep-wake cycle disturbance), as well as sudden changes from apathetic isolation to psychomotor agitation were not to be neglected.

They were affected: declarative memory of recent events and moments, both anterograde and retrograde, but without major changes in the procedural memory, which is a good prognostic element for an efficient subsequent functioning, both personal and professional, as well as for limiting post-CBT personality changes.

The Galveston amnesia and orientation test were used, which helped to assess the self-psycho-temporal and spatial orientation as well as the awareness of the trauma and its consequences.

Neuro-cognitive recovery was addressed to the following areas:

- mnemonic function and in particular amnesic corneal disorder of traumatic cause, cognitive training being centred both anterograde and retrograde, aiming at restoring sequentiality, regaining new strategies for coding and storing information, increasing the level of social and professional performance.
- the prosexic function, aiming at widening the field of attention, both verbal and vision-spatial, as well as strengthening the support of attention and increasing the speed of information processing.
- language, by combating aphasia, whose complete disappearance we expect to be in about one year after TBI, then reaching a fluent global language. The neuropsychological tests addressed the chronic anomalous linguistic deficit, aiming at obtaining semantic coherence, narrative discourse and cancelling the communication disorders of the aprosody type.

- executive and control functions aimed at the patient's abilities to outline goals, plan activities, select an appropriate response pattern and obtain control over behaviour. The work of the psychologist was focused on the lack of initiative of the patient, on the modification of the rigidity of thinking, on the cancellation of the deficit of solving problems and on strengthening the abilities to cope with a demanding environment.

- anosognosia, was a severe behavioural sequela of TBI that significantly interfered with the patient's recovery (the patient recognizing with difficulty her own disease).

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