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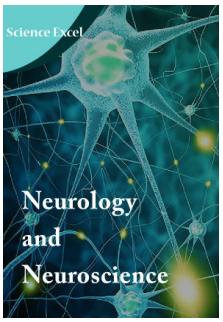

Capgras Syndrome, Out of Body Experience and Autoprosopagnosia: Case Study with Literature Review

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Abstract

Psychosis, characterized by hallucinations and delusions, is a common feature of psychiatric disease, especially schizophrenia. In the case of psychosis, the subject suffers from delusion (false beliefs) and hallucination (false perception); the impression for non-specialists is schizophrenia. In this presentation the patient has both delusion (false belief) and hallucination (false perception), but the diagnosis was not psychosis or schizophrenia. The false belief represents the Capgras syndrome, whereas the false perception is represents autoscopic phenomenon (AP), i.e. out of body experience (OBE). Capgras syndrome is a 'falsely believes' that a close relative or friend has been replaced by doubles or imposters. Whereas the out of body experience -false perception- the subject feels that his/her "self", or is located outside the physical body and somewhat elevated, from this elevated extra personal location that subject experiences seeing his body and the world. In addition, something's happening to the patient; he experiences an inability to recognize his face in mirror (autoprosopagnosia). All this occurred to an 18-year-old patient who left the hospital one week later post head injury, brought to my office with his father six weeks ago after complete recovering from subdural hematoma in the right frontoparietal lobes, post motorcycle accident.

Introduction

TDelusional misidentification syndromes (DMS) are psychopathologic phenomena in which a patient consistently misidentifies persons, objects, places, or objects. Christodoulou [1] described DMS as Capgras syndrome, Fregoli syndrome, syndrome of intermetamorphosis, and syndrome of subjective doubles. Capgras syndrome is the core of the group of MDS in which the patient misidentifies a familiar member (loved one), object, and regards him instead as double or impostor. Capgras syndrome was described in 1923 by Capgras and Reboul-Lachaux. Capgras reported a woman with the delusional belief that some family members had been replaced by identical doubles. He called it l'illusion des sosies (illusion of doubles) [2] or "the illusion of Doppelgänger" [3].

Capgras syndrome reported to be associated only with psychiatric diseases, including paranoid schizophrenia [1,4] and schizoaffective disorder [5,6]. However, more recently Capgras syndrome has also been described in neurological conditions including cerebrovascular disease [7,8,9] after head trauma [10] pituitary tumor [11] and especially in neurodegenerative diseases such as Alzheimer disease [11-15] and Lewy body disease [15,16] as well as posterior to brain injuries [10].

Capgras delusions can present due to head injury [17], minor head trauma [18] and subarachnoid hemorrhage [19], brain disorders, metabolic disturbances, toxicities, functional mental illnesses [20] or it can occur without an identifiable cause [20,21]. The cerebral basis of the Capgras syndrome was first explained by Alexander and Stuss [22] as a disorder that correlated with a combination of the right hemisphere damage causing problems with visual recognition and frontal lobe damage causing difficulties with familiarity. Joseph 1986 [23] reported that the cerebral disconnection hypothesis assumes that the two cerebral hemispheres independently process visual information from the face, and Capgras delusion results when these processes fail to integrate. Some researchers hypothesize Capgras syndrome has often been associated with either right hemispheric or bilateral lesions to the frontal and/or temporal lobes affecting limbic, paralimbic, and visual pathways involved in affective processing [24].

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Some psychologists hypothesized that patients with Capgras syndrome have conscious ability to recognize faces was still potent. Still, they may also present with damage to the system that facilitates emotional arousal to familiar faces [25]. Hirstein and Ramachandran [26] also shared similar findings in studying one patient with Capgras syndrome after a brain injury. This brain injury could be a disconnection between the temporal cortex, an area where familiar faces are recognized, and the limbic system involved in emotions. Hirstein revised this theory and suggested that the patient with Capgras syndrome would not recognize familiar faces [26]. In most of the cases that documented are associated with preexistence neuropsychiatric conditions and no single impairment or pattern of lesions has been found to underlie all cases.

Autoscopic phenomena (AP) are psychic illusory visual experiences defined by the perception of the images of one's own body or one's face within space, either from an internal point of view, as in a mirror or from an external point of view. Brugger [27] was one of the first authors to study autoscopic phenomena. Based on phenomenological criteria Brugger outlined the main features of six types of autoscopic phenomena: autoscopic hallucination, heautoscopy, out of body experience (OBE), feeling of a presence, negative heautoscopy and inner heautoscopy.

Both AP have been related to various neurological diseases such as epilepsy, migraine, neoplasia, infarction and infection [27-34] and psychiatric diseases such as schizophrenia, depression, anxiety, and dissociative disorders [28,33,35-39].

In an out of body experience, subjects feel that their "self", or center of awareness, is located outside the physical body and somewhat elevated. It is from this elevated extra personal location that subjects experience seeing their body and the world [33,39-43]. An out of body experience is defined by the presence of three phenomenological characteristics: disembodiment (location of the self-outside one's body), the impression of seeing the world from a distant and elevated visuo-spatial perspective (extracorporeal egocentric perspective) and the impression of seeing one's own body (or autoscopy) from this elevated perspective [39,40].

Most neurological authors agree that OBE relate to a paroxysmal pathology of body perception and cognition. Thus, some authors postulated a dysfunction of proprioception and kinesthesia, others a dysfunction of visual or vestibular processing, as well as combinatory dysfunctions between these different sensory systems [27,28,45,31,32,36]. It is hypothesised that the temporo-parietal junction plays a role in "self" processing, distinction between the "self" and the "body" and integration of multisensory information (proprioceptive, tactile, visual, and vestibular) [39,46]. Disturbance at the temporo-parietal junction disrupts these functions resulting in a breakdown of unity between the self and the body [39,47]. With respect to the neuroanatomical underpinnings of OBE, most studies found the parietal, temporal and occipital lobe to be involved [27,31,36,37,48]. Some of these authors have suggested either a predominance of temporal lobe involvement [31-33] or parietal lobe [28, 29,36]. With regard to hemispheric asymmetries, some authors found no hemispheric predominance [31,33,36], while others have suggested a right hemispheric predominance [27-29,32].

In this case study, in addition to Capgras syndrome and Out of body experiences, more uncommonly, other experience as an autoprosopagnosia (an inability to recognize one's own face), a feature of dementia, schizophrenia and PTSD [49-53] which is distinct from autotopagnosia, an inability to recognize or localise a part of one's own body occurring in left parietal damage [49].

Case presentation

An 18 year old, male patient was brought for psychiatric consultation by his father with chief complaints of belief that his family members had been replaced by identical impostors. He had been hospitalized for subdural hematoma in the right frontoparietal lobes, post motorcycle accident six weeks ago; he left the hospital 1 week later with complete cured. In addition to his false belief (misidentification), something's happening to the patient; he experiences tow others experiences; he feels that his "self" is located outside the physical body and somewhat elevated (OBE), and an inability to recognize his face in mirror (autoprosopagnosia).

Capgras syndrome

He became delusional about the identities of his father, mother, sisters and brothers. He believed that his real family members had replaced. He was firm on his belief and became irritable when confronted with. The patient remained highly distressed throughout day and night, expressing severe anxiety, hypervilgilance, he exhibited progressive worsening. Despite reassurance from relatives, closed friends and neighbors he continued to express concern that his family had been replaced. Interestingly, his belief unlimited to his family members, but to involve his relatives, closed friends and neighbors had been replaced by identical impostors. Despite this suffering the patient did not show any aggressive or violence behaviours towards this family, but rather found that he used to be with them through this description "I get used to the presence of people who assure me that they are my family. My father, mother and the rest of my family members have been replaced, and these people are imitating my real family. They are not my family. Even though this family assures me that they are my family, so I ask them to swear by Holy Koran that they are his family; they did, but I do not feel any bond or feelings that they are my true family. But I feel grateful to them and I want to pay them for their service to me".

Autoprosopagnosia

Few days later, when looking in a mirror, the patient did not recognize his face as his own; he saw a stranger not resemblance to himself. Though, that family gave him old photos, he did not recognize them. The same when the family showed him video pictures, he denied that photos in the video are Him. It was a shock to him, he rapidly became agitated, shouting, screaming; he asked everyone who am I? He became increasingly upset; severe anxiety persisted few days followed by low mood, displeasure, crying, sleeping very little at nights, and he became withdrawn.

Out of body experience

Few days later he had strange experiences. He felt as if he was outside his self, looking at his body from another perspective (from elevated position). He gave this description, "from elevated place, I saw myself walking among people below and the people were walking around". He felt shocked and shaken and reported the experience initially was terrifying and dreadful. Another episode, he was sitting in the car with his brother, unexpectedly, he felt as being above his real body and felt himself in the space, and from this elevated position in the space

he saw his physical body was sitting in the car. He asserted that the visual experience was in colour, and was visually clear and very realistic. During this OBE the patient experienced that he was localized outside of the physical body and looking down on his body that he was sitting in the car. From this elevated place (elevated extrapersonal location) the patient reported that "from this elevated perspective I saw myself sitting in the car, I saw my whole body down; head shoulders, whole trunk, upper and lower extremities" In addition to seeing his body (autoscopic) the patient saw a man beside him. Also, he described the people and movement in the street. On other occasion, he was walking with his father in the street before reaching to psychiatric clinic; suddenly, a sensation of being elevated in the space. He gave the description that "he saw himself walking in the street from above". Again he assert that scene was in colour and the experience is very real. In these experiences he reported unclear changes in the awareness of his self and body, describing himself as projected out of his body with a feeling of separation of self; the self is located outside of the physical body, the feeling that he was looking down at himself and the world from above (from elevated extracorporeal location) for a few seconds.

The patient asked in both experience if they were associated with feelings of dizziness, vertigo, and lightness or floating. He denied any such symptoms. He reported that OBEs typically happen without warning and usually last for few minutes. Interestingly, the patient stated that later experiences were not only separated into external world, autoscopy is part of him, also sharing thoughts and both bodies communicate by thought, action and feeling sympathy.

Interview

At the time of her psychiatric interview, he was found to be a well built young man, well dress and groomed. Cognition was normal integration of consciousness; alert, aware oriented to time, place, and person. Despite he is depressed but maintained eye contact. His mood was depressed and anxious. Attention, concentration and orientation were intact. He is cooperative, attentive, and interested. He reported subdural hematoma six weeks ago and completely recovered and left one week later. He denied any suicidality or homicidality. Neither alcohol nor drug used history. Personal, family, social history and current circumstances are normal. Speech was spontaneous. He denied having any paranoid, persecutory delusion or hallucinations in the past. Thought process was concrete, although his thought content contained a delusion about the family have an altered identity or replaced. The patient's family reports to the psychiatrist that he did not have any psychiatric or neurological disorders. The detailed general physical, neurological and other systemic examinations were within the normal limits.

Regarding the autoscopy, the case was analysed by means of a semi-structured interview, which recorded detailed phenomenological information about the OBE. Based on the criteria of autoscopic phenomena and concept of the phenomenological variables in the previous studies [27,40,54] that included the following variables: sensory hallucinations (visual, auditory, tactile), illusory body schema disturbances, visual characteristics of the autoscopic body (lateralization, view, partialness, body position: standing, sitting, supine; actions), more complex manifestations (sharing of thoughts, words, or actions, bilocation, emotions) as well as associated neurological signs (hemianopia, aphasia). With respect to vestibular manifestations, I inquired about the sensation of rotation, vertigo, falling, elevation, flying, floating, lightness and heaviness. Others, such as visceral sensations (nausea, vomiting, and palpitations) were analyzed.

Analysis

View: the autoscopic body was always seen in the front-view. The patient has an impression of seeing his own body from elevated perspective.

Hallucination: visual hallucination; he experienced as highly realistic. Hearing voices but unclear. He denied tactile hallucinations.

Position of the autoscopic body: autoscopic body was in standing and sitting positions, the patient did not report a lying position (supine).

Partialness/complete: the whole autoscopic body was seen.

Vestibular hallucinations: the patient did not report vestibular hallucinations; without any warning, the patient had an experience of separation from his own body and seeing his body from elevated perspective.

Visceral sensations (nausea, vomiting, palpitations): only palpitations.

Illusory body schema disturbances: no illusory body schema disturbances.

Actions: his activities of the autoscopic body only walking.

Bilocation (in two places): he reported seeing the world and his body from one visuo-spatial perspective (from above).

Reality: he experienced as highly realistic.

Sharing of thoughts, words and actions: only sharing of thoughts and action (walking).

He experienced sympathy to autoscopic body.

Lesion side: Rt. cerebral hemisphere (right frontoparietal lobes).

Lesion site: subdural hematoma.

Discussion

Olaf et al [39] provide a very thorough review of earlier literature on out-of-the-body experiences and autoscopy and then report a detailed examination of 6 neurological patients who report such experiences. They found that patients with such experiences also report pathological sensations such as floating and rotating (associated with the vestibular system) and visual body-part illusions such as shortening or movement of limbs. In Blank and Mohr. [40] study reported that vestibular hallucinations and body schema disturbances, as well as the absence of hemianopia were associated with OBEs. In this case the patient did not report vestibular hallucinations; out-of-body experiences were not associated with feelings of dizziness, vertigo, lightness or floating. He reported that OBEs typically happen without warning and usually last for few minutes. The patient asserted that, no body schema disturbances or hemianopia. Auditory hallucinations were mainly observed in patients with OBEs [40]. In this case the patient had reported unclear auditory hallucinations.

With regard to the reality, the patient in this study asserted that the visual experience was in colour, and was visually clear and very realistic. This confirms reports of some authors have argued that only OBEs are judged as veridical [42, 39,55].

Although, several authors have reported that autoscopic hallucination and heautoscopy patients often only see the

autoscopic body partially [56-58], other authors have reported that OBE-patients generally see their entire body [39,41]. The patient in this study stated a complete seen whole autoscopy; saw his head, neck, upper and lower trunk, upper and lower extremities.

With respect to the position of the autoscopic body in the visual field observation by Green [59] and Brugger [60] were observed the frequent lateralization of the autoscopic body for OBEs. Whereas the autoscopic body in Blank and Mohr [40] tended to be seen more frequently in the central visual field. This case presentation confirms that autoscopy body was always seen in the front-view in OBE.

Regarding to the actual position of autoscopic body (sitting, standing, supine) in visuo-spatial perspective; this reflects the actual position prior to OBE. A supine body position was also found by Green 1968 [59] and Olaf et al 2004 [39]. In this case the patient in his experiences was in standing and sitting positions as the actual position prior to OBE (autoscopic body was in standing and sitting positions, the patient did not report a supine position).

Concerning to action and activities of the autoscopic body whether the autoscopic body was moving, or acting, the autoscopic body during OBE does not move or act [39,49]. The interesting in this case, the patient gave the description that "he saw himself walking in the street from above". In this particular phenomenon 'the activity' is contrary to what reported in all literature, where that activity specific to heautoscopy.

The patient reported that OBEs typically happen without warning and usually last for few minutes. Interestingly, the patient stated that later experiences were not only separated into external world, autoscopy is part of him, also sharing thoughts and both bodies communicate by thought, action and feeling sympathy. Literature reported heautoscopy is often associated with the experience of sharing of thoughts, words, or actions and which are less frequent in OBE [39,40]. The patient outlined here experienced to have access to the autoscopic body's thoughts and sometimes performing action (sharing of thoughts and action) and feeling sympathy. This phenomenological variable (sharing of thoughts, words, or actions) contradicted what Blank and Mohr [40] reported.

With respect to the lesion side, OBE some literature found no hemispheric predominance [33,36], others suggested a right hemispheric predominance [27-29,32]. Most studies found the parietal, temporal and occipital lobe [27,31,36,37,48]. Some of these authors have suggested either a predominance of temporal lobe involvement [31-33], whereas Olaf, et al. [39] hypothesised that the temporo-parietal junction [46]. In this case presentation study lesion was subdural hematoma in the right frontoparietal lobes.

Generally, published literature on Capgras syndrome is confined to a small number of case reports. With regard to misidentification, in some cases [62-66], there were multiple subjects of misidentification (Husband, baby, older son, father, sister, doctor), while in the other cases [62-64] only a single subject (husband or baby) was misidentified. The case outlined here, not only the family members were misidentified, but his closed friends and neighbors also misidentified.

It has been described that DMS is often accompanied by hostility towards the object of delusional misidentification [45]. The interesting in this case, the patient asserted "I feel grateful to them [family] and I want to pay them for their service to me". In simple words, though he had no feelings (showing absence of emotional, no familiarity) toward this family (imposters) who are imitating his real family, he has got used to their presence in the same house. The patient did not show any hostility or aggressive behaviuor towards the object of delusional misidentification. However, reports existing on single cases or small case series of violent acts in patients with Capgras syndrome including homicide, toward family members. In these cases, the authors claim that Capgras syndrome is specific risk factor for violence, aggression and even murder [67-72]. Single cases and series of cases of individuals with Capgras syndrome who have committed dangerous behaviors were diagnosed paranoid schizophrenia, schizoaffective disorder, bipolar disorder, atypical psychosis [67-72]. This literature attributes violent act, aggression and even homicide are frequently associated with Capgras' delusion. It is hard to attribute solely to the Capgras delusion, in addition to their diagnosis (paranoid schizophrenia, schizoaffective disorder, bipolar disorder, atypical psychosis) other risk factors were reported in these literature [persistent and long-standing delusional ideas of persecution and (or) paranoid ideation, auditory hallucinations of a commanding nature, sexual abuse, substance abuse] are likely to influence the possibility of violent act. Emily, et al. [73] found no evidence of physical violence or aggression associated with Capgras. And they reported that claims are particularly notable given they are largely based on a literature formed mainly of single cases or small case series that may be subject to significant reporting bias. Therefore, findings in literature must be interpreted with great caution [74]. In the same line, the presented case shows no violence or aggression towards the imposters (family).

Generally, man or a woman looks in the mirror to check his or her appearance and knows he or she is looking at his or her self. The self-face has a special meaning and its importance for the identity and the sense of self. Looking at ourselves in the mirror gives us access to our own image. There are several kinds of literature that try to explain phenomena associated with mirrors. Something's happening to some people, and it is very rare that when subject look to mirror, he cannot see his image and this known negative heautoscopy - refers to the failure to perceive one's own body or parts of it either in a mirror or when looked at directly [27,28,31,33,36,40,75,76] that distinct from prosopagnosia is a condition in which patients cannot recognize faces [77]. The later associated with acquired brain disease and has been reported in frontotemporal dementia [78] or autotopagnosia - an inability to recognize or localise a part of one's own body occurring in left parietal damage [49,79]. Patients with Capgras syndrome may claim that not only other persons, but also they themselves are replaced by identical substitutes [80,81], or fail to recognize themselves in a mirror [36,82,83] [84]. In this case outlined here the patient sees an image in the mirror, but this image is not him; he cannot recognize his own image. It is autoprosopagnosia that characterized by failure to recognize one's reflection in the mirror.

This case combined psychiatry and neurology. The cause was head injury, whereas the symptoms were psychological. The symptoms of the experiences were inability to recognize familiar faces and they replaces by others (Capgras syndrome), the patient became convinced of the existence of "imposter". Therefore, in Capgras syndrome is believed in (delusional disturbance). The patient has developed another experience; he found himself unable to recognize his face in the mirror (autoprosopagnosia) and this distinct from negative autoscopy or prosopagnosia. During these experiences, the patient found

himself elevated in the space to see himself and the world from a location outside his physical body usually from above (out of body experience). This is a hallucinatory experience of seeing one's body from above". Therefore, in out of body experience is perceived in (perceptual disturbance). This case represents the strangest and rarest in terms of occurrence. Rare cases may be isolated; however, to my knowledge, this is the first case that combines three syndromes Capgras syndrome, out of body experience and autoprosopagnosia. Both Capgras syndrome and out of body may have same the pathology mentioned above such as psychiatric diseases and neurological diseases or brain traumas, but the symptoms in both are different, may this due to different mechanisms.

Conclusion

In this case, Capgras syndrome, out of body experience and autoprosopagnosia which are the mystery that we have to search more for how this happens. Despite the main efforts on the main etiologies for knowing how they happen, these syndromes remain mystery for a simple reason, it may occur to healthy individual who does not suffer from mental or neurological diseases.

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