

Charles Bonnet Syndrome in Patient with Diabetic Neuropathy: Case Report

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Abstract

Introduction: Charles Bonnet syndrome (CBS) is a rare disorder which occurs in patients with any of the five fields perceptions impairment but usually occurs in patients with visual or auditory impairment and cause hallucination in absence of other psychiatric disease.

Methods: Lack of knowledge among the medicines may lead to wrong diagnosis, approach and treatment for the patient.

Results: In this article, we present a 69-year-old diabetic woman who had total visual loss due to diabetic retinopathy with visual hallucination.

Conclusion: Her sign and symptoms were improved during hospitalization and after discharge, they were controlled by antipsychotic medications and she had no symptoms recurrence after 9 months of follow-up.

Keywords: Charles bonnet syndrome , patient, diabetic neuropathy.

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Introduction

Diabetes is a common disease which can cause psychiatric disorders such as delirium, substance use disorders, depression, anxiety, psychotic illness like schizophrenia, eating disorders¹. This disease can also cause cognitive disorders in adults like intelligence, attention, psychomotor speed, cognitive flexibility, and visual perception disorders². Charles Bonnet syndrome (CBS) is a rare condition characterized by the presence of simple or complex visual hallucinations in patients with some form of sight impairment, occurring without conscious volition and with retained insight that what is observed during an episode is not real³. Simple hallucinations usually consist of lights and flashes known as photopsia, whereas complex hallucinations involve formed images that can including faces, figures, animals and vivid scenery. CBS has been estimated to occur in 11–15% of those with sight loss⁴. This percentage can be different due to age, sex, and diagnosis criteria cause for visual impairments in population. Based on patient's past medical history, the prevalence might be changed, for

example some articles mentioned that the prevalence of CBS in age-related macular degeneration is about 15%⁵. The visual hallucination of CBS is complex, and include of images with or without patterns which appear in focus and often move. Patients usually see different images, from human to animal figures and etc. which might have bizarre acts⁶. The images usually cause fear to them⁶. Hallucinations often develop after the onset of visual impairment. It can also represent phantom vision in patient with visual loss but the exact pathophysiology of this syndrome is still unclear^{7 and 8}.

Schmid and Krieglleder in 2024⁹ discussed shortcomings for predictive processing models of hallucinations by the example of the Charles-Bonnet-Syndrome. This case study shows that the current predictive processing account omits essential characteristics of stimulus-independent perception in general, which has critical phenomenological implications. They argued that the most popular predictive processing model of hallucinatory conditions –

the strong prior hypothesis – fails to fully account for the characteristics of nonveridical perceptual experiences associated with Charles-Bonnet-Syndrome.

Diana et al., in 2021 ¹⁰ said that Charles Bonnet Syndrome (CBS) is a rare clinical entity that is classically composed of visual hallucinations in the context of an altered optic pathway with preservation of reality judgment. They present the association of visual hallucinations with complex alterations of the nervous structures adjacent to the visual pathway and an atypical clinical presentation, thus explaining the possible mechanisms involved in the generation of these symptoms. Aslan et al., in 2023 ¹¹ said that Charles Bonnet syndrome presents with complex visual hallucinations in a visually impaired or blind person. The case highlights complex neuropsychiatric manifestations due to pituitary macroadenoma in geriatrics requiring multi-collaborative care. An 81-year-old man presented with a 3-year history of vivid visual hallucinations preceded by visual impairment and recurrence of a pituitary macroadenoma. Remission of hallucination occurred within 2 weeks of 1.5 mg of haloperidol per oral once daily; this is a rare case of Charles Bonnet syndrome after recurrent pituitary macroadenoma.

In this research, we aim to report an unusual case of CBS which present with diabetic retinopathy.

Case Presentation

A 69-year-old married woman was admitted to the hospital for the first time due to visual hallucination and agitation which has begun as 5 days before. Visual hallucination includes a picture of unknown man & woman who were talking to her, gradually disappeared

until the picture of man remained. In the description of the hallucinations, it was mentioned that a man who had glasses and funny beard was constantly filming the patient. It caused patient felt insecure and put a scarf over her face so that she would not be filmed in such a way that. The patient also said that he saw that the man had put poison in his food. Because of following the orders of hallucination, the patient had fallen from 3-4 stairs while walking from home to the yard, and the frequency of hallucinations increased 24 hours later. In past medical history, she had hyperlipidemia, diabetes and hypertension. The complications of diabetes in the patient includes diabetes neuropathy and completely vision loss. besides, she had left ear hearing loss and speech disorder. In the first 1-2 days of hospitalization, the patient believed that the man was filming him in the bathroom and even had access to her through under the bed and touched her while she was sleeping, which caused severe agitation in her. Sometimes, she mistook the people around herself for that man and was aggressive with them and identified them with delay. Before this, there were no complaints about the memory. The patient saw these hallucinations in a non-colored form and had no insight about it. Also, during the hospitalization, the patient suffered from delirium several times during the night, which led to the aggravation of hallucinations such as seeing a child who was in a pool. Cranial examinations were normal but nerve II (impaired light perception). In psychiatric examinations includes Vigilancy and working memory, Astragnosia, Dysgraphesthesia, tapping test and Gonogo were impaired. Brain Magnetic Resonance Imaging (Brain MRI) showed bilateral temporal lobes atrophy with hypodensity around the ventricles (Figures 1-A to 1-C).

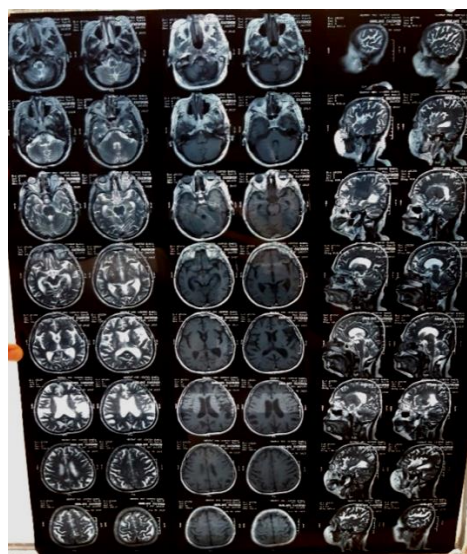


Figure 1-A



Figure 1-B

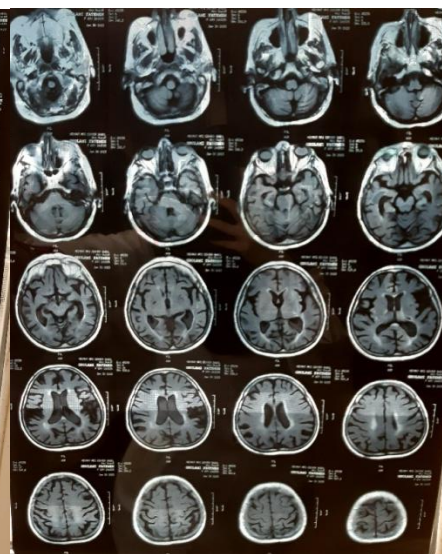


Figure 1-C

Figure 1- Brain Magnetic Resonance Imaging (Brain MRI).

In the figures 2, the atrophic area has been shown (Figure 2-A to 2-C).

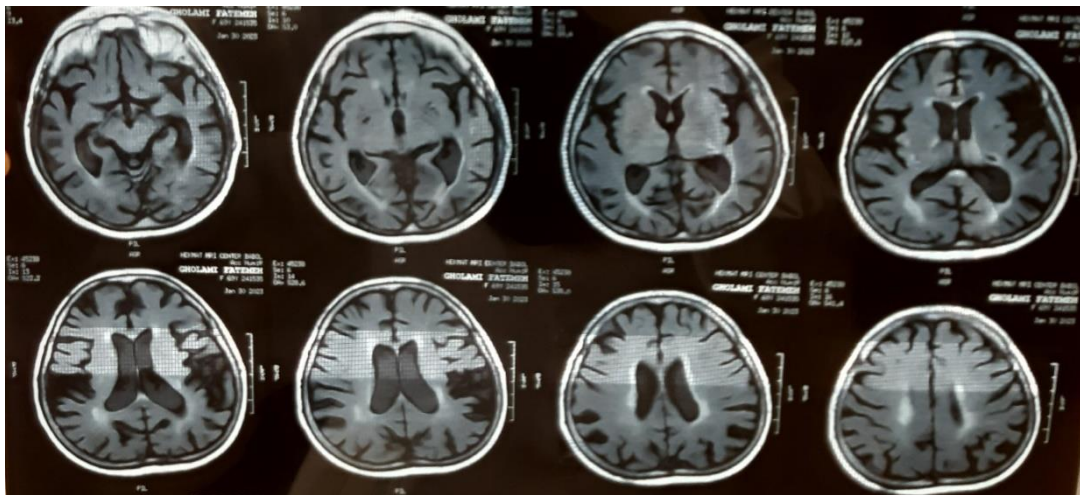


Figure 2-A

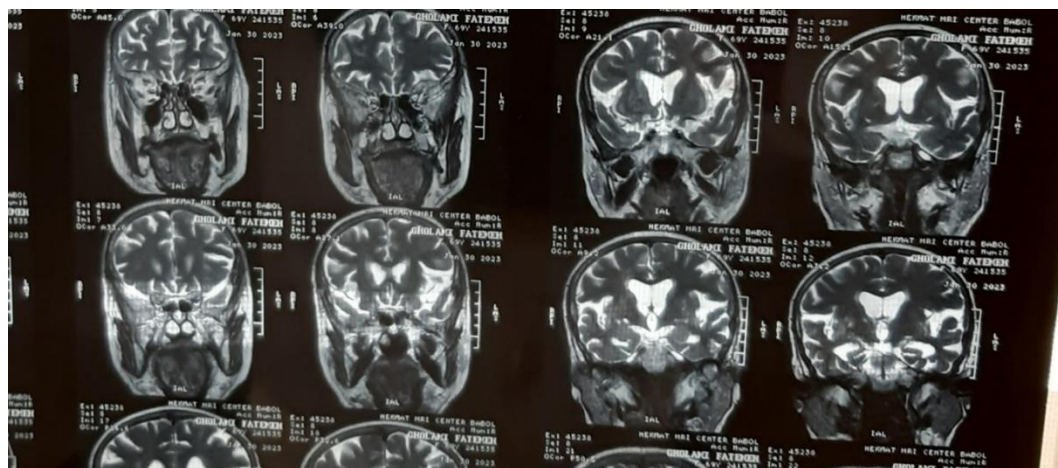


Figure 2-B

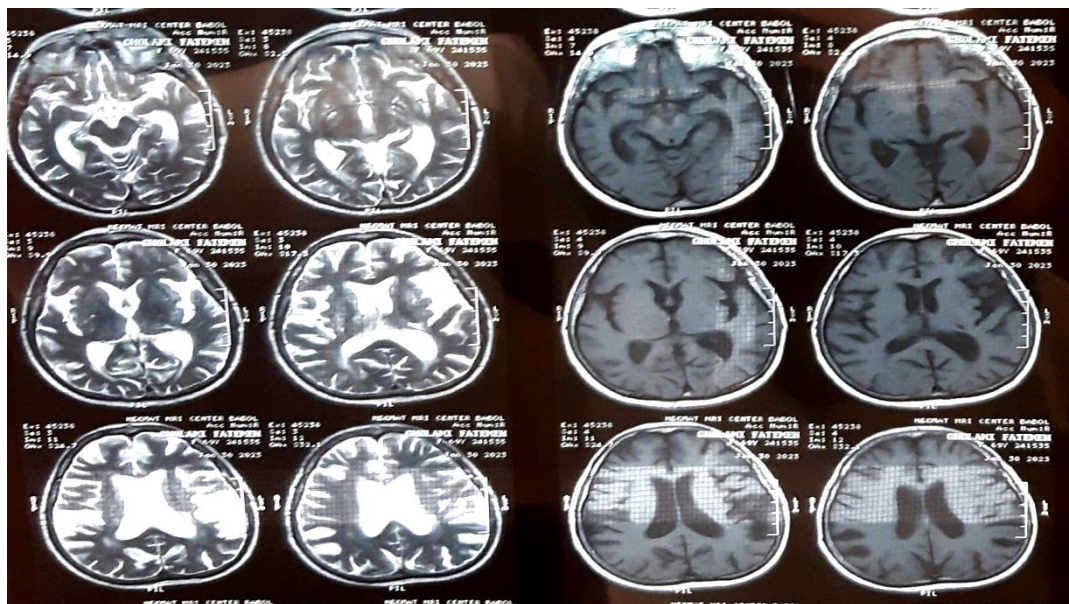


Figure 2-C

Figures 2. The atrophic area.

The scores of MMSE and Addenbrooke's tests were 26 and 61, consistently. Electromyography and Nerve Conduction Velocity (EMG/NCV) tests show severe axonal sensory motor. Electroencephalography (EEG) test showed abnormal awake EEG due to scattered spike and wave. Electrocardiography (ECG) showed Left Bundle Branch Block (LBBB). Diabetic polyneuropathy and severe carpal tunnel syndrome (CTS) in left side were found. Laboratory test such as complete blood count di (CBC), Liver function tests (LFT), Creatinine, prothrombin time (PT), Partial thromboplastin time (PTT), INR, folic acid level and Thyroid function test (TFT) were normal. FBS was 139, HbA1C was 8, Vitamin B12 was 137, BUN was 23 and Direct bilirubin was 0/5. Due to her hallucination, Past medical history and examinations, Charles Bonnet Syndrome was diagnosed and be treated by Memantin 5 mg Tablet BD, Aripirazole 10 mg Tablet ½ daily, Vitamin B1 300 mg daily, Halopridol 0/5 mg TDS, and Melatonin 5 mg tablet Daily. After 12 days of hospitalization, the symptoms gradually improved. The patient was discharged with the same medications and in the first 6 months, the follow-up of the patient was monthly and after that every 3 months. During this period and after that, there was no recurrence of symptoms.

Discussion

Charles Bonnet syndrome is a rare disorder which occurs in the patients with visual impairment ³. Visual and auditory hallucinations are common in this syndrome. Other sign and symptoms like psychosis, delirium and dementia are common in elderly patients which might cause different diagnosis ⁸. Because the hallucinations which are found in this syndrome, could be occurred in other disease such as drug or alcohol abuse (delirium tremens), Alice in Wonderland syndrome (AIWS), other psychiatric disorders like psychosis, schizophrenia, dementia, neurological disorders like narcolepsy, epilepsy, Parkinson disease, brain tumors, migraine, and other disorders like long term sleep deprivation ¹². Although the etiology of CBS is currently unknown, it is assumed that increasing in brain activity and disagreeing cortical inhibition might be involve in this syndrome ¹³. It is important for the visual impairment patients and their relatives to know about CBS. A study in Danmark found that 80% of patients had no idea about CBS at all ¹⁴. Besides, lack of knowledge about this syndrome among the physicians has important role in failure in diagnosis, not informing their patients with visual impairments about the risk for this syndrome, and at the end cause wrong treatment approach. A study in Canada showed that 54/7% of physicians had no knowledge about the CBS

and 84/9% of physicians did not discuss with their patients abouts this syndrome ¹⁵.

The patient which we presented here, had diabetic retinopathy and completely visual loss. She had visual hallucination and with absence insight. During hospitalization the symptoms were improved and after discharge, they were controlled with medications.

Conclusion

CBS in elderly patients with visual impairment, can be intimidating for their relatives and even care givers. It is important for medicines to have ability to diagnose this syndrome because of overlapping with other disease or psychiatric disorders. Also, it is important to be known that, proper antipsychotic medication using is helpful in controlling the sign and symptoms of this syndrome.

Highlights

What Is Already Known?

In this article, It is presented a 69-year-old diabetic woman who had total visual loss due to diabetic retinopathy with visual hallucination. Her sign and symptoms were improved during hospitalization and after discharge, they were controlled by antipsychotic medications and she had no symptoms recurrence after 9 months of follow-up.

What This Study Adds?

In this research, it is aimed to report an unusual case of CBS which present with diabetic retinopathy.

Ethical consideration

This study was considered all of the ethical consideration.

Authors' Contributions

Concept: Elham Motevalli Alamouti, : Maryam Vajdi, Romina Hamzepour, Simin Khamoushi
Data analysis: Maryam Vajdi, Romina Hamzepour,
Preparing of the manuscript: Maryam Vajdi, Elham Motevalli,

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Conflicts of Interest Disclosures

We declare there is no conflict of interest.

Consent for Publication

We declare consent for publication.

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