

CHARLES BONNET SYNDROME PREVALENCE IN A YOUNGER OPHTHALMOLOGY OUTPATIENT POPULATION

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SUMMARY

Background: In the literature, most of the studies on Charles Bonnet Syndrome (CBS) were performed on older populations. This study aims to determine the prevalence and epidemiology of CBS and the nature of the hallucinations of the younger group of patients from an ophthalmology outpatient clinic of a university hospital.

Subjects and methods: Twenty-eight patients were randomly chosen from the outpatient ophthalmology clinic of a university hospital, and those who agreed to participate in the study were included. First, the patients were asked if they had ever seen visions that other people cannot when they were fully awake. The patients who were experiencing this symptom were given sociodemographic questionnaire and Psychiatry Institute Visual Hallucination Questionnaire, and asked to explain their hallucinations in detail. To exclude a psychiatric disorder, the participants were made a psychiatric interview as well.

Results: The study included 19 female (67.9%) and 9 male (32.1%) participants. Five patients (17.9%) were diagnosed with CBS. Average age of the patients diagnosed with CBS was 39.4 (min.31-max.48). Three of the 5 patients (60%) with CBS noted negative emotions (fear, wince and bewilderment) about their hallucinations.

Conclusions: The prevalence of CBS (17.9%) we've found is compatible with the medical literature. CBS may also be accompanied by "relatively milder" ophthalmologic problems (myopia, astigmatism, etc.). The hallucinations which CBS patients experience could be quite distressing, and the individuals might have hard times to reveal their complaints because of the apprehension of stigmatization. To inquire this symptom during clinical examination may be the first step to help these individuals.

Key words: signs and symptoms - perceptual disturbances – hallucinations - Charles Bonnet Syndrome

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INTRODUCTION

Charles Bonnet Syndrome (CBS) is the name given to the clinical picture in the presence of visual hallucinations in the presence of normal or near-normal mental state with a pathology present in the eye.

CBS, was first described by Charles Bonnet, a Swedish scientist, in 1760. The same was also experienced by Charles Bonnet himself due to cataract in the last stages of his life.

However, although a bilateral decrease in visual acuity constitutes a triggering factor, the phenomenology of visual hallucinations is not usually correlated with the underlying ocular disease, and CBS can also be seen in patients without reduced visual acuity (Jurišić et al. 2018, Shiraishi et al. 2004). CBS patients do not necessarily have a wide defect in visual fields, bilateral visual impairment, decreased visual acuity and social isolation. Besides, there is no consensus on the cut-off value of visual acuity in CBS (Özşahin et al. 2016). There are also contradictory studies on whether the prevalence of CBS is higher in males or females (Menon et al. 2003). There is no definitive treatment for CBS, and its cause has not yet been fully elucidated.

The differences in the criteria applied for the diagnosis of CBS appear to be a cause of this difference in its prevalence. The diagnostic criteria for CBS are not clear, however different diagnostic criteria have been set for CBS by various authors (Damas-Mora et al. 1982, Gold & Rabins 1989, Podoll et al. 1990, Ball 1991).

Hence, all these authors have included the presence of insight against visual hallucinations in the diagnostic criteria. Therefore, "being psychologically normal" has at least partially been included in the criteria for CBS patients (Terao & Collinson 2001, Terao et al. 2002). Nevertheless, the stigmatization by the community regarding psychiatric diseases and complaints and the consequent failure by the patients to report the disorder for the fear of being stigmatized as "insane" make it difficult to identify the real prevalence of this syndrome.

Although, in clinical practice, CBS is frequently associated with eye pathologies, visual impairment was not emphasized in the diagnostic criteria (Al-Zubidi & Lee 2015, Ffytche 2007). Moreover, CBS can also be encountered in people without impaired vision (Teunisse et al. 1999, Podoll et al. 1989, Terao & Collinson 2000). To some point of view, another possibility is that some dementia patients experience complex visual hallucinations in the early stage and are incorrectly diagnosed with CBS in the clinic (Terao & Collinson 2000).

In the literature, most of the studies on CBS have been performed on older populations. The prevalence of CBS among people over 65 years of age was reported to be between 0.4% and 29% (Abbott et al. 2007, Tan et al. 2004, Hou & Zhang 2012, Adachi 1996, Berrios & Brook 1984, Brown & Murphy 1992, Neshet et al. 2001, Norton-Willson & Munir 1987, Olbrich et al. 1987, O'Reilly & Chamberlaine 1996, Teunisse et al. 1995, Holroyd et al. 1994, Teunisse et al. 1996). On the other hand, there are several studies suggesting that

patients in the younger age group may also experience visual hallucinations, and there is no logical reason set forth regarding the incidence of CBS in the elderly population whereas the explanations on age-related changes that trigger visual hallucinations remain insufficient (Teunisse et al. 1996). Visual hallucination is a distracting symptom that adversely affects everyday life. Accordingly, we intended to explore the prevalence of CBS in patients who applied to the ophthalmology clinic including the patients in the younger age groups and with relatively mild eye diseases (such as myopia, astigmatism, etc.).

SUBJECTS AND METHODS

Sample

The participants were chosen among patients who applied to the outpatient ophthalmology clinic and were between 18-60 years old at the time of the enrolment. The study included 28 patients.

Patients' Information and Demographic Data Form

Each group administered a questionnaire on the patient's age, educational level, occupation, with whom and with how many people the patient lives, marital status, number of children, economic status, cigarette & alcohol & drug use, whether the patient has a known medical, neurological, psychiatric disorder, and whether the patient uses a medication on a continuous basis.

Visual Hallucination Interview at Psychiatric Institute

This is a structured interview used to understand the phenomenology of visual hallucinations, the vast majority of questions of which are related to hallucinations. The interview also includes detailed questions about hallucinations. The interview was developed from a previous unstructured survey (Ffytche & Howard 1999, Santhouse et al. 2000). During the interview, the participants are asked about various phenomenological categories of pathological visual hallucinations. Besides questions on, for example, hallucinations' temporal characteristics (e.g. the duration & frequency of the hallucination), emotional component (feeling whether comfortable, uncomfortable or neutral), localization (in front of the object, outside the corner of the eye, in the blind areas), details or physical characteristics (e.g. whether they look clearer than real objects, whether they are in the form of a complete image or individual objects & shapes, whether the backside is visible when looking at the object, lights, lines, colors, zig zags, regular or irregular patterns, a body without face, words, letters, musical notes, figures), whether there is something that triggers hallucination (e.g. whether the patient has hallucinations when the eyes are closed, or whether this occurs when the patient blinks

his/her eyes or moves his/her head), the questionnaire also includes exclusion questions. For instance, it is also questioned whether there are images associated with voice, speech, dizziness or strange smells, whether they occur only in bed or when the patient falls asleep, whether there is a history of psychiatric or neurological disorder, and whether there are scary small animals, snakes or worms (Santhouse et al. 2000, Bell et al. 2010).

The authors' permission was obtained for the interview, which was subsequently translated into Turkish. The interview, which takes about 10 minutes, was conducted face to face by a psychiatrist.

This research was approved by the responsible Ethics Committee, and the participants were included in the study after signing a written voluntary consent form. The study protocol complies with the Declaration of Helsinki 1975.

Study inclusion criteria:

- Patients who approved the voluntary consent form to participate in the study;
- Being between the ages of 18 and 60;
- Those who have no known psychiatric or neurological diseases;
- Those who have insight against hallucinations;
- Those who were admitted to the ophthalmology clinic and diagnosed with any eye disease (including myopia, astigmatic).

Study exclusion criteria:

- Patients under the age of 18 and above the age of 60;
- Those who have a psychiatric history (those who were diagnosed with one of the followings: schizophrenia, dementia or personality disorder, alcohol or substance use disorder), those who had previous psychotic manic or psychotic depressive episode, who use a psychiatric medication and who use a drug or substance that is likely to cause hallucinations;
- Those who have delusions or who have hallucinations in other modalities (auditory, olfactory, gustatory or haptic);
- Those who have a cognitive status which is not suitable for answering survey questions;
- Those who do not approve the voluntary consent form despite being informed.

RESULTS

Nineteen women (67.9%), 9 men (32.1%) participants are included to the study. Of those included in the study, 10 (35.7%) were elementary school graduates, 9 (32.1%) were university graduates, 8 (28.6%) were high school graduates and 1 (3.5%) was unschooled. While 16 (57.1%) were having a regular job, 12 (42.9%) were unemployed. While 1 (3.5%) of the participants was living alone, twenty-seven (96.4%) of them were living with their families (Table 1).

Table 1. Certain sociodemographic characteristics of the participants

	Number	%
Gender		
Male	19	67.9
Female	9	32.1
Educational Background		
Elementary school	10	35.7
University	9	32.1
High School	8	28.6
Unschooling	1	3.5
Employment Status		
Has a regular job	12	42.9
Has no regular job	16	57.1
Lives with		
Family	27	96.4
Alone	1	3.6

Five patients (17.9%) were diagnosed CBS. Average age of the CBS diagnosed patients were 39.4 (min.31-max.48). The duration of low vision was 20 years on average in those with the CBS, while it was 12.7 years those without. Mean visual acuity was 0.74 on average in those having CBS, while it was 0.89 in those who do not (Table 2).

While 3 of the 5 patients (60%) with CBS noted negative emotions (fear, wince, bewilderment) about their hallucinations, 1 was neutral and 1 was pleased (Table 3).

While three (60%) of the CBS patients stated that they saw the hallucination in the corner of their eyes, two (40%) stated that they saw the hallucination at the point they looked. As three of the CBS patients were

diagnosed with myopia, 1 was diagnosed with astigmatism and an other one was diagnosed with degenerative myopia (Table 3).

DISCUSSION

Our study aimed to understand whether CBS was also prevalent in populations younger than those in many other studies in the literature. The CBS rate that we found was 17.9%, which is consistent with the literature. The mean age of our study population was 41.6 years. In the literature, there are studies suggesting that, like elderly patients, young patients also experience CBS (Teunisse et al. 1996, Elflein et al. 2016). This is also confirmed by our findings.

Neither decrease in visual acuity, nor severe vision impairment, nor severe eye disease is required for the diagnosis of CBS (Al-Zubidi & Lee 2015, Ffytche 2007, Teunisse et al. 1999, Podoll et al. 1989, Terao & Collinson 2000). The diagnosis of our 5 patients diagnosed with CBS was refractive error (3 myopia, 1 degenerative myopia, 1 astigmatism).

Of 5 patients diagnosed with CBS, 3 (60%) stated that they had negative feelings (fear, wince, bewilderment) due to hallucinations. Besides, one of the patients stated feeling neutral whereas one stated feeling pleased. Accordingly, the hallucinations that the patients with CBS may create distress for the patient, however the patient cannot reveal his complaint for fear of stigmatization (Klarić & Lovrić 2017). Informing and questioning the patient about the situation during the examination may be the first step in terms of rendering aid to the individual.

Table 2. Comparison of certain sociodemographic and medical characteristics of those with CBS and those without CBS

	CBS (-) (n=23)	CBS (+) (n=5)	p
Mean age	41.00	39.40	0.787
The duration of low vision (year)	12.70	20.00	0.608
Mean visual acuity	0.89	0.74	0.147

Table 3. Patients with Charles Bonnet Syndrome

	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5
Age	31	32	40	48	46
Sex	Female	Female	Female	Male	Female
Educational Level	Elementary school	Elementary school	Elementary school	Elementary school	Unschooling
Visual acuity	0.6	1.0	1.0	0.4	0.7
Contents of the Image	Bubbles	Mist, a dressed man standing	Shadow of a man, spider	Mist, shadow and white snowflakes	Green & black insects, snowflakes
Size of the image	Smaller than it should be	In a normal size	In a normal size	In a normal size	In a normal size
How he/she feels when he/she has hallucinations?	Neutral	Fear, shuddered	Wince	Pleased	Bewilderment, unhappiness
In which area of the eye does he/she see them?	In the corner of the eye	At the point where she looks	In the corner of the eye	In the corner of the eye	At the point where she looks
Diagnosis	Astigmatism	Myopia	Myopia	Degenerative Myopia	Myopia

According to the findings of our study, CBS may also be present in "relatively mild eye diseases" experienced by the younger age groups.

CONCLUSION

Approaching from a person-centered medical perspective, each patient is a unique individual, and the meaning of the symptoms experienced is perceived differently by each person (Jakovljević & Ostojić 2015). Therefore; questioning the symptoms and how those symptoms make the patient feel, informing the patient about this situation and, if necessary, ensuring that the patient receives psychiatric treatment would be beneficial for the patient.

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