MAK HILL Publications Research Journal of Medical Sciences

Research Article
doi: 10.59218/makrjms.2023.11.146.149

Shedding Light on Charles Bonnet Syndrome: An In-Depth Analysis in South Gujarat

[1]Sajidali S. Saiyad, [2]Mahesh K Bhabhor, [3]Alkeshkumar Rameshchandra Vara and [4]Hemendra R. Suthar

[1]Department of Physiology, Kiran Medical College, Surat, Gujarat, India
[2,3]Department of Physiology, Shree M.P Shah Government Medical College, Jamnagar, Gujarat, India
[4]Department of Physiology, GMERS Medical College, Gotri, Vadodara, Gujarat, India

OPEN ACCESS

Key Words
Charles bonnet syndrome, hallucinations, cataract

Corresponding Author
Hemendra R. Suthar,
Department of Physiology, GMERS Medical College, Gotri, Vadodara, Gujarat, India
dr.hemendrasuthar@gmail.com

Author Designation
[1,3]Associate Professor
[2,4]Assistant professor

Received: 21 September 2023
Accepted: 08 October 2023
Published: 15 October 2023

Citation: Sajidali S. Saiyad, Mahesh K Bhabhor, Alkeshkumar Rameshchandra Vara and Hemendra R. Suthar, 2023. Shedding Light on Charles Bonnet Syndrome: An In-Depth Analysis in South Gujarat. Res. J. Med. Sci., 17: 146-149, doi: 10.59218/makrjms.2023.11.146.149

ABSTRACT
Charles bonnet syndrome (CBS) is an uncommon condition characterized by intricate visual hallucinations in individuals experiencing visual impairment, often stemming from conditions such as macular degeneration (MD), cataracts, or glaucoma. This study was conducted to investigate the prevalence of CBS in South Gujarat through a comprehensive and methodical approach. Over the course of our research, 250 participants from diverse age groups and genders, each with varying root causes of visual impairment, were enrolled from Eye Hospitals in South Gujarat. Thorough ophthalmological assessments were conducted to confirm the presence of visual impairment and individuals meeting the inclusion criteria were further examined for CBS using a structured questionnaire. Detailed assessments of CBS symptoms were performed through structured interviews and standardized questionnaires. Our primary findings indicate that CBS affected approximately 5% of the targeted sample of 250 individuals with visual impairments, highlighting its notable prevalence within this demographic. Statistical analyses, utilizing established epidemiological methodologies, took into account the intricate nature of CBS and potential demographic and clinical variables. Furthermore, we delved into the impact of CBS on the mental health and overall well-being of those affected, underscoring the significance of early detection and appropriate management. This study underscores the imperative for heightened awareness among healthcare providers and the general public regarding CBS. It also emphasizes the requirement for tailored interventions and support systems to enhance the quality of life for individuals living with CBS. Further research is warranted to deepen our comprehension of CBS's underlying mechanisms and to formulate effective prevention and management strategies.

INTRODUCTION

Visual hallucinations, defined as perceptions of visual stimuli in the absence of external input, have been associated with various ocular and neurological conditions in recent years[1-6]. Individuals who have experienced vision loss may encounter both simple and complex visual hallucinations. Charles bonnet syndrome (CBS) is a condition characterized by elaborate visual hallucinations in individuals with intact cognitive function and no other apparent cause for their hallucinatory experiences[7]. Its prevalence among individuals with low vision (LV) ranges from 0.5-19.5%[8].

Visual hallucinations in CBS can manifest as either simple or complex hallucinations[9]. Simple hallucinations consist of basic visual elements such as spots, flashes, floaters and geometric shapes, while complex hallucinations involve more intricate images, including people, faces, animals, plants, or entire scenes. These hallucinations can result from pathological conditions affecting various parts of the visual system, including the eyes, central visual pathways and the occipital brain[10]. While simple hallucinations are often associated with lesions in the occipitotemporal and occipitoparietal visual association neocortex, complex hallucinations are linked to damage in the same neocortical regions[10].

Despite the diverse manifestations of CBS, it is primarily characterized by visual hallucinations in individuals with acquired vision loss and preserved cognitive function. These hallucinations are typically recognized as unreal by CBS patients, who may initially be deceived by them but eventually discern their hallucinatory nature[7]. The visions in CBS are often distinctive and whimsical, exhibiting finer details than real objects due to the patients' visual impairments. The duration of these episodes can range from seconds to hours and the condition may persist for days to years, often recurring in clusters or periodically with asymptomatic intervals in between. Over time, the frequency of these episodes typically decreases[11].

LITERATURE REVIEW

Charles bonnet syndrome (CBS) emerges as a consequence of visual impairment, giving rise to vivid and diverse visual hallucinations. These hallucinations can encompass simple patterns or intricate images and are experienced by individuals with intact cognitive function, devoid of delusions, distinguishing CBS from conditions like paranoid schizophrenia and other psychoses.

The syndrome derives its name from Charles Bonnet, a Swiss philosopher who documented the condition while observing his visually impaired grandfather, Charles Lullin, afflicted by cataracts. In 1760, Bonnet recorded Lullin's colorful and whimsical descriptions of these hallucinations, which Lullin regarded as imaginative and often amusing creations. Charles Bonnet, a Renaissance thinker of his era, embraced the philosophy of "tabula rasa," where knowledge arises from experience, influencing his hypotheses on the brain and CBS. He postulated a modular brain organization, with distinct segments serving separate functions and suggested that Lullin's hallucinations drew from memory rather than sensory input-a concept bearing resemblance to modern understanding. While Bonnet's early insights were pioneering, most contemporary CBS research has been conducted in recent decades, highlighting the pressing need for ongoing research to fill critical knowledge gaps in this fascinating condition[12].

Research objectives/aims:

- To ascertain the occurrence rate of hallucinatory experiences in individuals diagnosed with Charles Bonnet Syndrome
- To provide a detailed account of the attributes of these hallucinations in Charles Bonnet Syndrome patients, including their frequency, duration, sensory modality and content
- To evaluate the influence of these hallucinatory episodes on the overall quality of life of affected individuals, encompassing aspects of emotional well-being, social interactions and daily functioning

MATERIALS AND METHODS

We conducted assessments on a cohort of 250 individuals, aged 18 years or older, who sought treatment at ophthalmology and psychiatric clinics and presented with best corrected visual acuity of 6/12 or lower to determine the presence of charles bonnet syndrome (CBS).

Prospective participants were deemed ineligible if they met any of the following criteria: Visual acuity exceeding 6/12, a confirmed diagnosis of schizophrenia or another mental disorder known to include hallucinations as a symptom; usage of medications associated with visual hallucinations, experience of hallucinations in sensory modalities other than vision; or active alcohol consumption.

A screening question, adapted from Holroyd *et al*.[13] with slight adjustments in phrasing, was posed to potential participants: "We recently had a patient here who faced similar visual challenges to yours. This condition made it difficult for them to perceive objects and they also reported seeing things that were not present or visible to others. Have you ever experienced something like this?" If the response was affirmative, further interviews were conducted

with a focus on various aspects of visual hallucinations, including recent frequency, time of occurrence during the day, duration, eye affected, eyelid influence, emotional impact, content of hallucinations and insight into their unreal nature. Many of these questions were adapted from Teunisse.

RESULTS

In this specific subgroup of 5 participants, all individuals (100%) reported experiencing hallucinations. Among these 5 participants with hallucinations, one participant (20%) was male, while the remaining four participants (80%) were female. Notably, a significant proportion of individuals, 4 out of 5 (80%), exhibited full insight into their hallucinatory experiences, indicating that they were fully aware that these hallucinations were not real.

Partial insight was observed in one participant (20%) within the group experiencing hallucinations, suggesting that this particular individual had some level of awareness that their hallucinations were not based in reality, although their understanding was not complete.

Of the 5 participants who reported hallucinations, a majority, 3 out of 5 (60%), described their hallucinatory experiences as repetitive, meaning they encountered them on multiple occasions. Furthermore, all 5 participants (100%) who experienced these repetitive hallucinations reported that these episodes occurred on a monthly basis.

These parameters offer valuable insights into the characteristics of individuals who underwent hallucinatory experiences in your study, including gender distribution, levels of insight into the hallucinations, the repetitive nature of these experiences and the frequency of their recurrence. This information enriches our understanding of the hallucinatory phenomena associated with Charles Bonnet Syndrome within your specific study population.

DISCUSSIONS AND ANALYSIS

None of the participants had a documented history of psychiatric illness, indicating the absence of pre-existing psychiatric conditions.

Regarding the eye affected:

- A significant majority of participants (54.4%) exhibited left eye involvement
- Right eye involvement was observed in 44% of participants
- A very small fraction (1.6%) reported involvement of both eyes

Table 1: Characteristics

	N = 250	
Parameters	No.	Percentage
Age (years)		
30-40	16	6.4
41-50	54	21.6
50-60	65	26.0
60-70	57	22.8
70-80	58	23.2
Gender		
Male	119	47.6
Female	131	52.4

Regarding the underlying eye conditions and their distributions:

- Glaucoma was present in 10% of participants
- Diabetic retinopathy affected 33.6% of participants
- Cataracts were reported by 25.2% of participants.
- Age-related macular degeneration was identified in 31.2% of participants

After thorough evaluation, it was determined that a subset of participants had been diagnosed with Charles Bonnet Syndrome (CBS), accounting for 2.5% of the total 250 individuals included in the study.

These parameters collectively provide a comprehensive overview of the demographics and characteristics of the study population, encompassing factors such as age, gender, medical history and specific eye conditions. This information is invaluable in gaining insights into the prevalence of Charles Bonnet Syndrome in the South Gujarat region and identifying potential associated risk factors.

CONCLUSION

The findings pertaining to hallucinations in the context of charles bonnet syndrome (CBS) within our study population offer intriguing insights into the manifestation of this phenomenon. Firstly, it is noteworthy that all five participants in this subgroup reported experiencing hallucinations. This underscores the prevalence of hallucinations as a defining characteristic of CBS within our sample, aligning with established diagnostic criteria for the syndrome. However, the gender distribution among participants with hallucinations, with a notable majority of females (80%), raises intriguing questions regarding potential gender-related patterns in CBS. While the modest sample size necessitates caution in interpreting this gender disparity, it prompts further investigation to explore whether significant gender differences exist in CBS prevalence or presentation. Furthermore, the differentiation between full insight (80%) and partial insight (20%) into hallucinations

offers valuable insights into the cognitive experiences of individuals with CBS. Those with full insight were entirely aware that their hallucinations were not real, aligning with the typical features of CBS. In contrast, the participant with partial insight possessed some level of awareness but lacked a complete understanding. This finding underscores the heterogeneity in how individuals with CBS perceive and interpret their hallucinations, suggesting that some may experience a more nuanced relationship with their visual phenomena. Moreover, the revelation that 60% of participants with hallucinations reported repetitive experiences, occurring on a monthly basis, underscores the chronic and recurring nature of CBS-related hallucinations. This observation emphasizes the persistence of these visual phenomena and highlights the significance of ongoing assessment and support for individuals with CBS. Collectively, these parameters contribute to a more comprehensive understanding of CBS and its diverse manifestations within our study population. Nevertheless, it is crucial to acknowledge the limitations of our study, particularly the small sample size, which underscores the need for future research with larger and more diverse cohorts to validate and expand upon these intriguing findings.

REFERENCES

1. Schadlu, A.P., R. Schadlu and J.B. Shepherd, 2019. Charles bonnet syndrome: A review. Curr. Opin. Ophthalmol., 20: 219-222.
2. Gross, N.D., D.J. Wilson and R.A. Dailey, 1997. Visual hallucinations after enucleation. Ophthalmic Plast. Reconstr. Surg., 13: 221-225.
3. ffytche, D.H., R.J. Howard, M.J. Brammer, A. David, P. Woodruff and S. Williams, 1998. The anatomy of conscious vision: An fmri study of visual hallucinations. Nat. Neurosci., 1: 738-742.
4. Cohen, S.Y., A.B. Safran, R. Tadayoni, G. Quentel, B. Guiberteau and C. Delahaye-Mazza, 2000. Visual hallucinations immediately after macular photocoagulation. Am. J. Ophthalmol., 129: 815-816.
5. Pomeranz, H.D. and S. Lessell, 2000. Palinopsia and polyopia in the absence of drugs or cerebral disease. Neurol., 54: 855-859.
6. Eong, K.G.A., G.Y. Fujii, E.W.M. Ng, M.S. Humayun, D.J. Pieramici and E. de Juan, 2001. Transient formed visual hallucinations following macular translocation for subfoveal choroidal neovascularization secondary to age-related macular degeneration. Am. J. Ophthalmol., 131: 664-666.
7. Eperjesi, F. and N. Akbarali, 2004. Rehabilitation in charles bonnet syndrome: A review of treatment options. Clin. Exp. Optom., 87: 149-152.
8. Shiraishi, Y., T. Terao, K. Ibi, J. Nakamura and A. Tawara, 2003. The rarity of charles bonnet syndrome. J. Psychiatric Res., 38: 207-213.
9. Adamczyk, D.T., 1996. Visual phenomena, disturbances, and hallucinations. Optom. Clin., 5: 33-52.
10. Zhuzhuni, H., A. Nazaret, L. Iodice, S. Celletti, S. Anticoli, L.D. Cioccio and F. Cipolla, 2018. Charles Bonnet syndrome versus occipital epilepsy, a diagnostic challenge. Acta. Biomed., 89: 262-264.
11. Teunisse, R.J., F.G. Zitman, J.R.M. Cruysberg, W.H.L. Hoefnagels and A.L.M. Verbeek, 1996. Visual hallucinations in psychologically normal people: Charles bonnet's syndrome. Lancet, 347: 794-797.
12. Fernandez, A., G. Lichtshein and W.V.R. Vieweg, 1997. The charles bonnet syndrome: A review. J. Nervous Mental Dis., 185: 195-200.
13. Holroyd, S., P.V. Rabins, D. Finkelstein, M.C. Nicholson, G.A. Chase and S.C. Wisniewski, 1992. Visual hallucinations in patients with macular degeneration. Am. J. Psychiatry, 149: 1701-1706.