Charles Bonnet Syndrome (CBS) refers to visual pseudo-hallucinations that occur in the elderly with visual impairment. The syndrome is named after the 18th Century Swiss naturalist Charles Bonnet, who described the condition in his own grandfather and which he himself suffered from in his later years.

Its prevalence has been reported at 10 to 15 per cent and occurs most commonly in the elderly, probably because of the frequency of visual impairment in this age group. It does not show gender preference and appears later in life at a mean age of 57.5 years.

The relevance to geriatric medicine is that patients may be incorrectly diagnosed with psychiatric conditions or dementia if their physicians remain unaware to the existence of the syndrome. In this article, Drs Sitara Khan and Jeffrey Lim discuss the clinical course of the syndrome.

Aetiology
The aetiology of CBS is still largely unknown. It is likely that non-organic factors such as isolation and a contracted social network play a major part in the development of the syndrome. Burke has suggested a neurological basis for these hallucinations, proposing that biochemical and molecular changes cause a loss of sensory input from the visual cortex (deafferentation). This is the phenomenon whereby hyperexcitation develops in neurons when their afferents have been silenced, and is best exemplified in the phantom-pain syndrome. However, it is likely that a combination of factors – visual impairment, social isolation and cerebral dysfunction – contribute to the pathogenesis of CBS.

Clinical features
The hallucinations are vivid, complex and well formed. They frequently have no personal meaning, are recognised as being unreal by the patients and can sometimes be voluntarily terminated by the patient. In this article, Drs Sitara Khan and Jeffrey Lim discuss the clinical course of the syndrome.

Risk factors
Advanced age and visual impairment are significant risk factors for CBS along with social isolation, although this has not been confirmed statistically. Unsurprisingly, common conditions leading to CBS are macular degeneration, glaucoma and cataracts.
Onset   Sudden
Cortical defects  Absent
Visual defects  Present
Visual hallucinations Present
Intact sensorium  Present
Delusions  Absent
Insight   Present.

Table 1. Diagnostic criteria of Charles Bonnet Syndrome

The course and prognosis of the condition is very variable. The hallucinations are generally well tolerated and benignly regarded by the patient – however, uninformed patients can become anxious as they are unaware of the underlying condition. Improvement in the hallucinations may result from addressing the underlying visual impairment (e.g. removing a cataract) or when the remaining visual acuity is lost (e.g. progression to total blindness).

Management

Treatment of CBS is multi-pronged – physician reassurance, patient education and improving visual acuity comprise some of the options available to clinicians. Pharmacotherapy plays a role in ameliorating the hallucinations but there is only anecdotal evidence available – Batra recommended an atypical neuroleptic melperone; Kornreich et al cautioned the use of another atypical, risperidone, as it exacerbated the condition; and Fernandez found that identical neuroleptics have different effects on the hallucinations and the authors recommend that patients should receive individual treatment for CBS.

The significance to the elderly

The significance of CBS lies in the danger that elderly patients might be wrongly diagnosed with psychosis on the basis of their hallucinations. Such patients might also be reluctant to admit to such symptoms for fear of being labelled as suffering from mental illness. Such misconceptions might also account for low incidence and prevalence figures, and physicians should therefore inquire about visual hallucinations in elderly visually impaired patients.

Case study

A patient presented to the Accident & Emergency department with acute agitation and distressing visual hallucinations. He had a one month history of visual hallucinations, but had previously always maintained insight that they were not real. He had significant visual impairment secondary to bilateral cataracts and the General Practitioner (GP) had diagnosed Charles Bonnet syndrome. The hallucinations were always distressing in nature, and included both animate and inanimate objects. He had recently been diagnosed with depression by his GP and had been started on citalopram a week prior to admission.

He had an abbreviated mental test score of 8/10 and systems examinations were unremarkable. There were no signs suggestive of infection or an acute neurological event that could account for the patient’s symptoms. Blood tests showed hyponatraemia, with a plasma sodium level of 124mmol/L. Computed tomography of the brain showed generalised cerebral atrophy and small vessel disease, but no acute changes. The remaining investigations, including electrocardiogram and chest X-ray, were normal.

Hyponatraemia, being a well-recognised cause of neurological disturbances, was addressed, firstly by discontinuing citalopram (hyponatraemia is a known side-effect of selective serotonin reuptake inhibitors). Together with fluid restriction, the sodium level improved, but the patient continued to experience visual hallucinations irrespective of this, and in the presence of normal remaining blood tests. The hallucinations occurred at a frequency of one every five days, and took a variety of forms.

The patient was then reviewed by an ophthalmologist and underwent surgery for the cataract in the right eye. Following this he remained in hospital for a week, during which he did not report any further visual hallucinations.
Increased awareness amongst physicians and patients of the syndrome will allow earlier recognition and treatment. Although treatment of the visual impairment might ease the symptoms, it is the reassurance that their condition is not a ‘mental health problem’ that brings relief to these patients.2,11

**Conclusion**

CBS is an important condition that remains underdiagnosed. The patient described in the case above had well-documented risk factors for developing the condition, namely advanced age and bilateral cataracts. The key clinical feature is the recognition by the patient that the hallucinations are unreal, and this point is valuable in differentiating it from psychosis. Management of CBS is multi-faceted and involves reassurance, education and, where possible, improving visual acuity.

**Conflict of interest:** none declared

**Key points**

> CBS refers to pseudo-visual hallucinations occurring in those with visual impairment.
> It is a surprisingly common condition, with prevalence estimated at 10–15 per cent.
> Loss of sensory input to visual cortex leads to cerebral dysfunction.
> Patients maintain insight into their hallucinations.
> Management of CBS includes reassurance, patient education and improvement of visual acuity.

**References**