CONDITION

Central serous choroidopathy

Learn how central serous choroidopathy causes fluid under the retina, what symptoms to watch for, and how eye specialists diagnose, monitor, and treat it.

WHAT IT IS
Eye condition causing fluid under the retina

BODY SYSTEM
Eyes and vision

MAIN SYMPTOMS
Blurred central vision, wavy lines, gray central spot, reduced contrast

WHAT CAUSES IT
Exact cause unknown

HOW IT IS DIAGNOSED
Dilated eye examination and OCT imaging

MAIN TREATMENT
Monitoring, photodynamic therapy, or laser treatment

CAN IT BE CURED?
Sometimes - fluid clears but may recur

IS IT AN EMERGENCY?
Sometimes - sudden substantial vision loss

LONG-TERM OUTLOOK
Most isolated episodes improve, but persistent fluid can cause permanent vision damage

Overview

Central serous choroidopathy is an eye condition in which fluid collects under the retina, usually near the center of vision. It is also commonly called central serous chorioretinopathy, or CSC.

The retina is the light-sensitive layer at the back of the eye. Its central area, called the macula, provides the sharp vision needed for reading, driving, recognizing faces, and seeing fine detail. Beneath the retina are the retinal pigment epithelium, a supporting cell layer, and the choroid, a network of blood vessels.

In CSC, changes in the choroid and retinal pigment epithelium allow fluid to leak under the retina. This lifts part of the retina away from the tissue beneath it and can disturb central vision.

CSC often affects one eye at a time, although imaging may show changes in both eyes. Many first episodes improve as the fluid clears, sometimes without treatment. However, the condition can return or become long-lasting. Persistent or repeated fluid may damage light-sensing retinal cells and cause lasting problems with contrast, color, or central vision.

A new change in central vision deserves an eye examination. Similar symptoms can occur with other retinal conditions, so symptoms alone cannot confirm CSC.

Symptoms

Symptoms depend on where the fluid collects and how much of the retina is affected. Some people notice a small change, while others have more obvious difficulty using the affected eye.

Possible symptoms include:

Symptoms may become easier to notice when each eye is tested separately. Even after retinal fluid disappears, contrast or color vision may not immediately return to its previous level.

CSC usually does not cause severe eye pain or marked redness. Seek urgent eye care for a sudden major loss of vision, a curtain or shadow across vision, many new floaters, repeated flashes of light, or a painful red eye. These symptoms are not typical of uncomplicated CSC and may point to another problem that needs prompt assessment.

- A blurred or dim area in the center of vision
- Straight lines that appear bent, wavy, or uneven
- Objects that seem smaller or farther away through one eye
- A gray, dark, or washed-out spot in central vision
- Reduced contrast, especially in dim light
- Colors that look less vivid or slightly different
- Difficulty reading small print or recognizing fine detail
- A temporary change in the focusing prescription of the affected eye

Causes and risk factors

The exact cause of CSC is not fully understood. Research suggests that the choroid may become unusually thick or congested, increasing pressure beneath the retina. At the same time, the retinal pigment epithelium may not contain or remove fluid normally. Fluid can then pass into the space under the retina.

Corticosteroid exposure is an important and well-established risk factor. Corticosteroids like prednisone or hydrocortisone are medicines used to reduce inflammation. They include tablets, injections, inhalers, nasal sprays, skin creams, eye medicines, and joint injections. The risk is not limited to steroid tablets.

Do not stop a prescribed corticosteroid on your own. Sudden withdrawal can be dangerous with some medicines. Tell both the prescribing clinician and the eye specialist about every steroid product you use, including nonprescription creams or sprays. They can decide whether the medicine is still needed or whether an alternative or gradual reduction is appropriate.

Other factors associated with CSC include:

CSC is diagnosed more often in men and commonly develops during working-age adulthood, but it can affect people of any sex or age. Stress is associated with the condition, but having CSC does not mean that stress alone caused it. Evidence for some reported associations, including particular infections or personality traits, remains inconsistent.

A clinician may ask about sleep, pregnancy, medical conditions, recent stressors, and all prescription and nonprescription products. This history can help identify a factor that may be safely addressed.

- Higher natural cortisol levels, including those caused by Cushing syndrome
- Pregnancy, particularly later in pregnancy
- Obstructive sleep apnea
- High blood pressure
- Major sleep disruption or shift work
- Psychological stress
- Use of certain medicines that affect stress-hormone or blood-vessel pathways

Diagnosis

An ophthalmologist, a medical doctor specializing in eye disease, usually diagnoses CSC through an eye examination and retinal imaging. The pupils may be dilated so the clinician can examine the macula and the rest of the retina.

Optical coherence tomography, or OCT, is the main imaging test. It uses reflected light to produce detailed cross-sectional images of the retina. OCT can show fluid under the retina, changes in the retinal pigment epithelium, and the condition of the light-sensing cells. It does not involve radiation.

Other tests may be used when the diagnosis is uncertain, the condition persists, or treatment is being planned.

Fluorescein angiography uses dye injected into a vein to photograph blood flow and leakage in the retina. Indocyanine green angiography uses a different dye to show the deeper choroidal circulation. These tests can help locate leakage and reveal the wider pattern of choroidal changes.

Fundus autofluorescence is a noninvasive imaging method that maps stress or damage in the retinal pigment epithelium. OCT angiography may help detect abnormal blood vessels without injected dye, although conventional dye testing may still be needed in some cases.

The clinician may also look for conditions that can resemble CSC, such as age-related macular degeneration, inflammation inside the eye, abnormal blood-vessel growth, or a retinal tumor. Atypical findings may require additional imaging or blood tests.

Treatment and management

Treatment depends on how long the fluid has been present, its effect on vision, whether CSC has happened before, and whether both eyes or a person's work are affected.

For a first episode with manageable symptoms, an eye specialist may initially monitor the retina. Many acute episodes improve over several weeks to a few months. Follow-up OCT scans can show whether fluid is decreasing even before the person notices a clear improvement.

Management also includes reviewing corticosteroid exposure and other possible contributing factors. Any change to a prescribed medicine should be coordinated with the clinician who prescribed it. Treating high blood pressure or sleep apnea may be appropriate for general health and may also address associated factors. Good sleep habits and practical stress support can be helpful, but they should not be presented as a guaranteed cure.

Treatment may be considered when fluid persists, vision is significantly affected, episodes recur, or retinal changes suggest a risk of lasting damage.

Photodynamic therapy is an established treatment for persistent or chronic CSC. A light-sensitive medicine called verteporfin is given into a vein. A low-energy laser is then directed at the affected choroid. Many retina specialists use modified protocols with reduced medicine or laser energy to limit side effects. The goal is to reduce choroidal leakage and allow the fluid to clear. Temporary visual disturbance can occur, and rare complications include damage to retinal tissue or abnormal blood flow.

A conventional thermal laser may seal a clearly defined leakage point that is safely away from

the center of the macula. It may shorten the time that fluid remains, but it can leave a permanent retinal scar. For that reason, it is not suitable for leakage close to central vision.

Subthreshold or micropulse laser delivers energy in short pulses intended to limit visible retinal damage. Evidence suggests that it may help some patients, but studies have generally found photodynamic therapy more effective for chronic CSC.

Mineralocorticoid-blocking medicines, such as eplerenone, have been studied because they affect hormone pathways linked to the choroid. A major randomized trial did not find a meaningful vision benefit from eplerenone for chronic CSC. These medicines are therefore not considered a routine treatment solely for CSC. They can also affect potassium levels, blood pressure, and kidney function.

Injections that block vascular endothelial growth factor, known as anti-VEGF medicines, are not routine treatment for CSC itself. They may be used if CSC is complicated by abnormal new blood vessels beneath the retina.

Complications

Most isolated episodes do not cause severe vision loss, but recovery is not always complete. Some people continue to notice reduced contrast, mild distortion, altered color vision, or poorer night vision after the fluid has cleared.

Repeated or persistent fluid can damage the retinal pigment epithelium and photoreceptor cells, which are the retinal cells that detect light. This may produce permanent areas of blurred or missing central vision.

Less common complications include abnormal new blood vessels growing beneath the retina. This is called macular neovascularization. These vessels can leak fluid or blood and may require anti-VEGF treatment.

CSC may also return after an earlier episode. Recurrence does not necessarily mean that severe damage will occur, but repeated episodes make continued retinal monitoring important.

Follow up

Follow-up usually includes a vision check, a dilated retinal examination, and OCT imaging. The timing depends on the amount of fluid, duration of symptoms, treatment plan, and condition of the other eye. Keep scheduled visits even if vision seems stable, because OCT can detect changes that are difficult to notice at home.

Contact the eye clinic promptly if central distortion increases, a new gray spot develops, or vision becomes noticeably worse. A home Amsler grid may help some people track distortion one eye at a time, but it does not replace examinations or imaging.

Seek urgent or emergency assessment for:

These features are not typical of routine CSC follow-up and may signal retinal detachment, acute glaucoma, stroke, or another urgent condition.

- Sudden, substantial vision loss
- A curtain or shadow moving across vision
- Many new floaters or repeated flashes
- New vision loss with eye pain or marked redness
- Vision changes accompanied by weakness, facial drooping, speech difficulty, or a severe sudden headache

Sources

- American Society of Retina Specialists. Central Serous Chorioretinopathy . Retina Health Series patient fact sheet. Accessed March 2025.
- American Academy of Ophthalmology. Central Serous Chorioretinopathy . EyeWiki. Accessed March 2025.
- van Rijssen TJ, van Dijk EHC, Yzer S, et al. Central serous chorioretinopathy: Towards an evidence-based treatment guideline. Progress in Retinal and Eye Research . 2019;73:100770.
- Nicholson B, Noble J, Forooghian F, Meyerle C. Central serous chorioretinopathy: Update on pathophysiology and treatment. Survey of Ophthalmology . 2013;58(2):103-126.
- Lotery A, Sivaprasad S, O'Connell A, et al. Eplerenone for chronic central serous chorioretinopathy in patients with active, previously untreated disease for more than 4 months: The VICI randomized controlled trial. The Lancet . 2020;395(10220):294-303.
- van Dijk EHC, Fauser S, Breukink MB, et al. Half-dose photodynamic therapy versus high-density subthreshold micropulse laser treatment in patients with chronic central serous chorioretinopathy: The PLACE trial. Ophthalmology . 2018;125(10):1547-1555.