CENTRAL SEROUS RETINOPATHY

This leaflet is designed to give you some more information about your eye condition.

What is Central Serous Retinopathy?
This is a condition that effects the retina part of the eye. The retina is situated at the back of the eye and is responsible for converting the light that enters the eye into electrical impulses which return site. It is this delicate layer of tissue that is effected by CSR. It is a condition that typically effects people between the ages of 30 and 50 years and is due to a disturbance in the retinal pigment epithelial layer. Often there is a pinprick breach of the waterproof membrane at the back of the eye resulting in fluid leaking from the back of the eye into the retina causing a bubble like elevation of the retina.

What are the symptoms?
Typically people notice distorted vision, straight lines appearing wiggly as though one is looking through a beer glass. Also the vision centrally may be blurred. Later on, many years after this condition, it may lead to some wear and tear problems with the retina causing a gradual reduction in the central vision. It is exceptionally rare to so effect the vision as to require registration as partially-sighted and only ever effects a small amount of vision.

What is the cause?
No-one really knows, but several studies have been undertaken. It is not an infection and it is not caught and it is most likely an auto-immune abnormality which is where the body reacts against itself. Age affected is 20 - 50 years. Male:Female Ratio is 10:1 with Whites and Asians much more commonly affected than Black people.

Steroids
Up to 50% with bilateral central serous retinopathy are found to be taking steroids in some form, eg orally for asthma, or for skin conditions or inhalers for asthma. It is thus a common cause that should be asked for.

Current theory on aetiology
A major life stress, either work-related or personal, is present in many people shortly before the development of the disorder. One study evaluated psychological profiles and found that a type A personality profile, particularly a hard-driven and competitive personality, was much more common in patients with central serous retinopathy than in the control group. It has been postulated that higher plasma catecholamine levels in these patients may play a role in formation of the serous detachments. Similar detachments have been produced in monkeys after intravenous injections of epinephrine, suggesting a possible mechanism by which a personality trait may predispose to central serous retinopathy.

Which Layer is the Split in central serous retinopathy?

Close study of the high resolution Optical Coherence Tomography shows this to be a split with in the retinal pigment epithelial layers. It is sub Neuro-sensory retina but not beneath the retinal pigment epithelial but a split at Bruch's layer. Thus the Photoreceptors remain attached to their retinal pigment epithelial cells so that they can still function. If the Photoreceptors were to become detached from their retinal pigment epithelial cells as in a retinal detachment then they would not function and the vision would be very blurred. But in central serous retinopathy the vision is usually normal or only marginally reduced. We have patients who have chronic central serous retinopathy whose vision has remained static at says 6/12 or 0.3 for many years without deterioration. The nutrients can still dissolve from the choroid and into the retinal pigment epithelial cells to keep the photoreceptors working.

What is the treatment?
Generally speaking it is a self-limiting condition which resolves spontaneously (85% in 1- 6 months) and requires no specific treatment. The only treatment which has been used is laser treatment to seal the leak. This results in quicker resolution and improvement of vision over the short term but makes no difference as to the final vision and therefore as this procedure does carry some risks it is not undertaken routinely but for those people where a quick resolution is imperative, such as airline pilots and train drivers, this may be an option worth considering. Research

has been rather unproductive I have to say in this area at present.

Acetazolamide for central serous retinopathy.

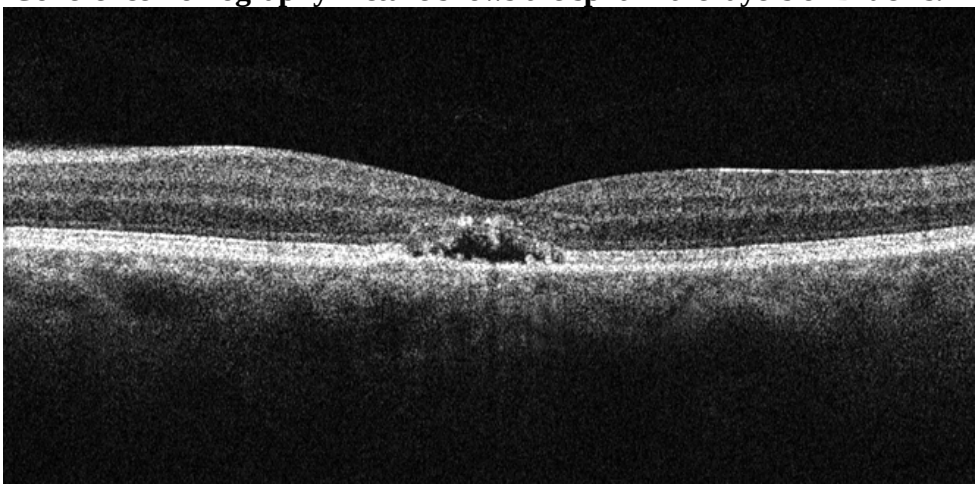
Fifteen acetazolamide-treated and 7 untreated (control) CSR patients who completed at least 24 months of follow-up. The treatment went on for 6 – 8 weeks.

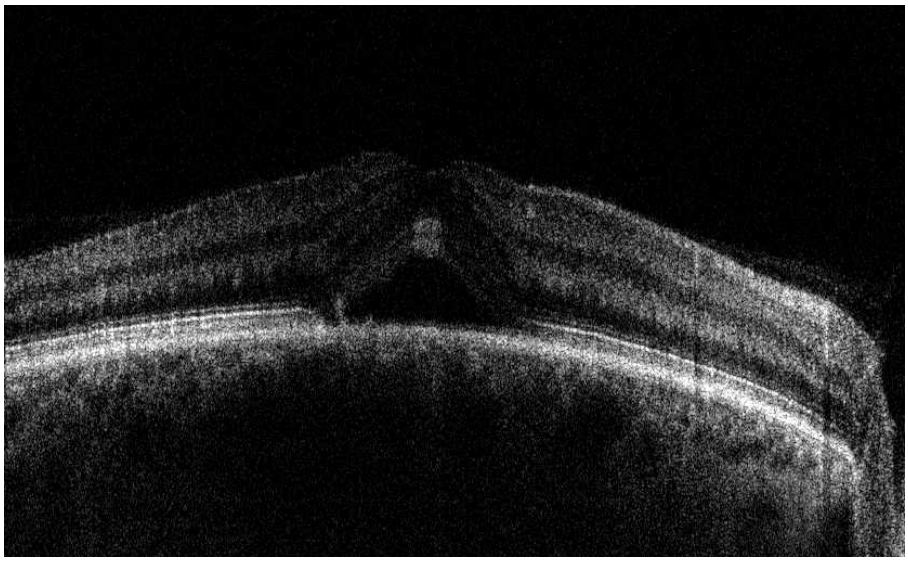
CONCLUSIONS: Acetazolamide treatment for CSR shortens the time for subjective and objective clinical resolution, but has no effect on either final visual acuity or recurrence rate of the disease. Ophthalmology. 2002 Sep;109(9):1723-5.

Fluorescein Angiography

Often in this condition we undertake a test called Fluorescein Angiography whereby the dye Fluorescein is injected into a vein and special photographs are taken of the back of the eye. This allows us to identify the leak and confirm the diagnosis and the extent of the condition. Your Doctor will be able to advise you as to whether this is necessary to do and explain to you the results.

Optical Coherence Tomography Picture shows the split in the layers of Bruch's.





Will glasses help?

Per se spectacles will not improve the condition. However, it is always wise to have an up-to-date spectacle

prescription which your Optometrist/Optician can organise for you. Up to 50% of people develop what we call a retinal epitheliopathy which can affect vision to a mild degree in the long term, but I have never found anyone with very marked reduction in vision that requires registering as partially sighted, it is always a mild degree of visual loss.

What to do if symptoms recur?
About 10% have recurrences. Should this occur then a review is indicated.

Anti-VEGF treatments with Avastin and Lucentis

Quote off Web from Patient. "Was also told that it was self-limiting, but after 4 months tried one injection of Avastin which gave good results after two weeks. Lettering which had been distorted before the injection now became straight, and all vision normal except for the circle still seen when my eyes were closed or just when immediately opened. 6 weeks after the injection, lettering became distorted again and a new symptom appeared. Faces on pictures I've had for years looked distorted on one side, as if they were melting into the other side of the face. A repeat OCT showed the swelling going down even more, so this may just be related to the resolving edema and hopefully will go back to normal eventually. It is going on 6 months since it first started though. Hope this is helpful to someone"

Research into the success of treating Central Serous Retinopathy with Avastin is scanty, but the drug is so successful in wet Age Related Macular Degeneration, diabetes and Vein occlusions, that there is every reason to hope it works in Central Serous Retinopathy as well. Certainly there appears to be cases where improvement has occurred so it is worth considering.

A recent study of 6 patients showed that 5 of the 6 patients showed very significant improvement. Encouraging results. 3 patients treated at Stoke Mandeville, 1 resolved, 1 improved and 1 did not.

Intravitreal bevacizumab injection for central serous chorioretinopathy.
Lim SJ, Roh MI, Kwon OW.
Nene Eye Hospital, Gangnam-Ku, Korea.
Retina 2010;30:100–6.
Editor's note: This small retrospective study of six patients was conducted to examine the efficacy of intravitreal bevacizumab injections for the treatment of central serous chorioretinopathy. The mean age of the patients was 42.3 years, and the mean follow-up was 9 months. The results are promising, with improvement in mean visual acuity on the ETDRS (Early Treatment Diabetic Retinopathy Study) chart from 40 letters at baseline to 53.3 letters at 3 months, and reduction in mean central macular thickness from 331.5 μm to 164 μm at 3 months. In addition, leakage on fluorescein angiography was subjectively reduced.

Standard-Fluence versus Low-Fluence Photodynamic Therapy in Chronic Central Serous Chorioretinopathy: A Nonrandomized Clinical Trial

- PURPOSE: **To evaluate the efficacy of low-fluence compared with standard-fluence rate photodynamic therapy (PDT) for treating chronic central serous chorioretinopathy.**
- DESIGN: **Prospective, multicenter, investigator-masked, nonrandomized clinical trial.**
- METHODS: **Forty-two eyes (42 patients) with chronic central serous chorioretinopathy were enrolled; 19 eyes received indocyanine green angiography-guided standardfluence PDT (50 J/cm2) and 23 eyes received indocyanine green angiography-guided low-fluence PDT (25 J/cm2). Primary outcome measures were the changes in mean logarithm of the minimal angle of resolution bestcorrected visual acuity and the rate of eyes with complete subretinal fluid reabsorption. Secondary outcomes were the changes in central foveal thickness and choroidal perfusion.**

● RESULTS: **Mean logarithm of the minimal angle of resolution best-corrected visual acuity improved significantly at all time points (*P* < .01), in the standardfluence group from 0.43 to 0.24 at 12 months and in the low-fluence-group from 0.46 to 0.16, without significant difference between the 2 groups. At 12 months, a complete subretinal fluid reabsorption was seen in 15 standard-fluence–treated and 21 low-fluence–treated eyes (79% vs 91%; *P* _ .5). In 1 standard-fluence eye, choroidal neovascularization developed at 3 months, and this eye received further PDT; in the other eyes, at 12 months, a moderate-significant choriocapillaris nonperfusion was seen in 8 standard-fluence–treated and 0 low-fluence–treated eyes (44% vs 0%; *P* _ .002).**
● CONCLUSIONS: **In most of the eyes, both standardfluence PDT and low-fluence PDT resulted in complete subretinal fluid reabsorption with visual acuity improvement. Choroidal hypoperfusion related to PDT could be reduced by low-fluence PDT. (Am J Ophthalmol 2010;149:307–315. © 2010 by Elsevier Inc. All rights reserved.)**

Thus reduced fluence Photodynamic Therapy is now the standard treatment of choice.

Full Fluency = 83 seconds by a non-thermal, microscopic laser (light dose 50 J/cm2, 600 mW/cm2
Half fluency = 83 seconds by a non-thermal, microscopic laser (light dose 25 J/cm2, 300 mW/cm2

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