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# Central Serous Chorioretinopathy Associated with Chronic Dermal Camphor Application

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**Citation**

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**Abstract**

This is a case report involving a 50 year old female of Chinese origin diagnosed with central serous chorioretinopathy (CSCR) of the right eye. Her past medical history was significant for use of Chinese herbal medicinal patches for over twenty years. The package insert of the herbal medication stated that camphor was the main active ingredient. Camphor has anti-inflammatory action and possibly acts in a similar way to corticotropic medications. Discontinuation of the herbal medicine resulted in improved vision and discontinuation of leakage on fluorescein angiography. Camphor may cause CSCR in a similar mechanism as corticosteroids.

## CASE REPORT

We report on a 50 year old female of Chinese origin who presented to our retina service with the complaint of slowly progressive decreased visual acuity in both eyes. She stated that her left sided vision, particularly central vision, had been poor for approximately one year. The right sided vision had progressively worsened over the previous four months. She had noted fluctuating vision over the past twenty years but did not seek ophthalmologic care. She denied any previous ocular disease, surgery or trauma. Her past medical history was significant for what she described as arthritis pain which was partially controlled by over the counter Chinese herbal medicinal patches for the past twenty years. She revealed eight patches along the wrist, arm, torso and legs. A review of the package ingredients revealed the main active ingredient of camphor 11%.

On exam her corrected visual acuity was 20/30 on the right and 20/80 on the left. She had no afferent papillary defect and intraocular pressures were normal. Her slit lamp exam was unremarkable. Dilated fundus exam of the right eye showed an elevated neurosensory detachment and macular pigment epithelial changes (Figure 1). An optical coherence tomogram revealed a neurosensory detachment of the right macula (Figure 2). The left eye showed chronic pigmentary changes of the macula without active disease. A fluorescein angiogram was done (Figure 3) and revealed expanding pockets of dye leakage with subretinal collections on the right side consistent with central serous chorioretinopathy (CSCR).

**Figure 1**

Figure 1: Right side fundus photo revealing elevated neurosensory detachment and macular pigment epithelial changes above the fovea.

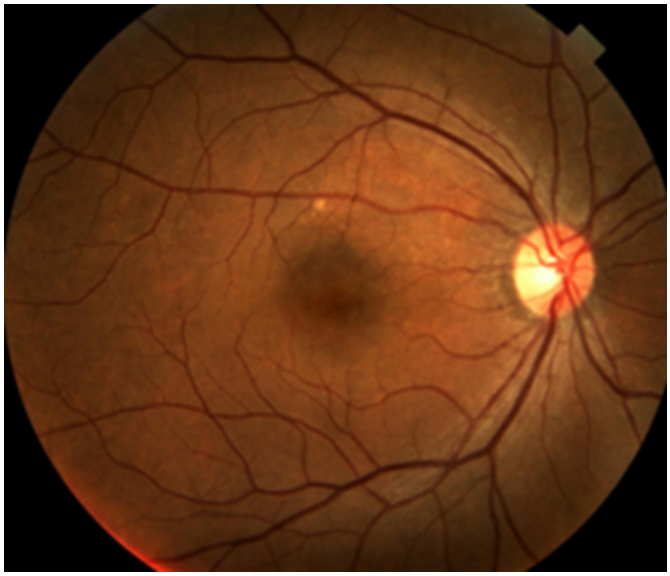


**Figure 2**

Figure 2: An coherence tomogram revealing a neurosensory detachment of the right macula.

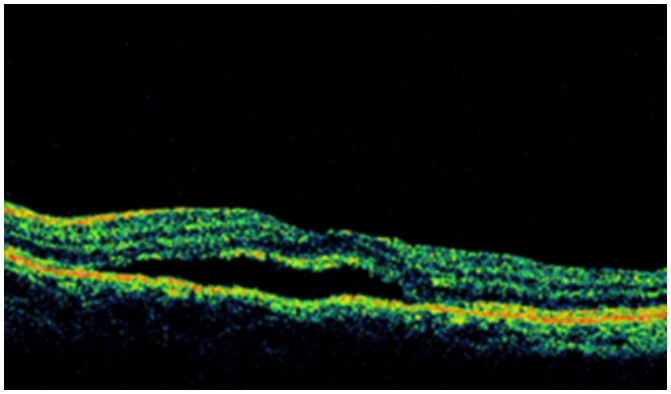
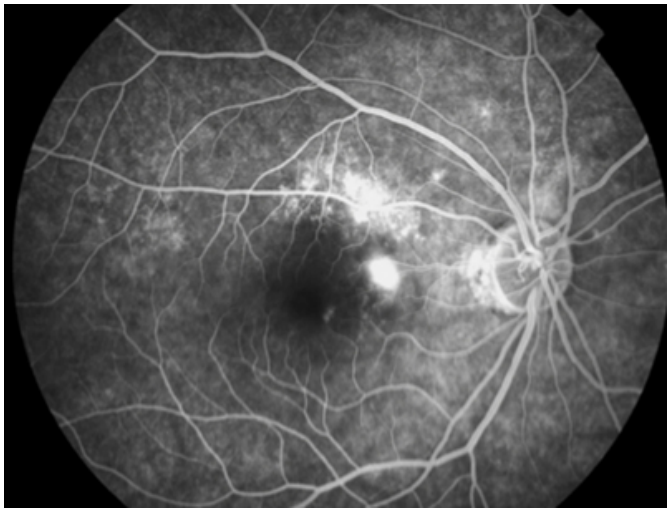


**Figure 3**

Figure 3: A fluorescein angiogram of the right eye revealing expanding pockets of dye leakage with subretinal collections on the right side consistent with central serous chorioretinopathy (CSCR).



A diagnosis of CSCR was made and treatment of the right eye was carried our with focal argon laser photocoagulation. She was told to discontinue the use of the topical camphor patches and remains stable 6 months out of treatment.

## DISCUSSION

Central serous chorioretinopathy (CSCR) is a relatively common disease of the choroid and retina presenting in middle age adults with metamorphopsia, micropsia, and decreased visual acuity. The clinical exam commonly reveals subretinal collections of fluid with associated pigment epithelial detachments. Lesions not affecting the central macula are often asymptomatic. Fortunately, CSCR is frequently self-limited with visual acuity returning to 20/25 or better within months.[1] The existence of previous episodes is revealed by residual pigment epithelial changes. Up to 50% of patients have recurrences, which can lead to permanent visual dysfunction. The systemic, particularly endocrinologic, associations with CSCR have been heavily researched. It is now well-established that supranormal glucocorticoids are linked CSCR.[2] This phenomenon has been observed with both endogenous or exogenous corticosteroids.

Endogenous steroid production leading to Cushing's syndrome can result in CSCR has been described by Bouzas, et. al.[3] Stress, Type A personality, and pregnancy, all of which relate to higher endogenous steroids, have also been linked with CSCR. Astute clinicians, including Gass, Harada and Wakakura observed this relationship and described it in detail[4,5,6] in an era in which steroids were the primary treatment modality for CSCR.

Exogenous steroid use leading to CSCR has also been widely described.[7] Many forms of steroid formulations including oral, topical, inhaled, and injectable have been linked to CSCR. The dosage and duration of use seemed to be directly proportional to the time of onset. Theories abound regarding the mechanism of steroid induced CSCR and range from the medication's affect on choroidal blood flow to alteration of retinal pigment epithelial transport functions. There are reports of sympathomimetic medications and one case of sildenafil citrate causing CSCR, however few medications have been found to have such a causal relashionship.[8,9]

In our patient, the decline in vision occurred simultaneously with her use of extensive amounts of topical Camphor. Camphor is a common ingredient in over-the-counter topical patches used to relieve minor aches and pains. Overdoses have been linked to hallucinations, tremors, convulsions, and even cardiac arrhythmias. Information regarding pharmacokinetics and pharmacodynamics of Camphor is difficult to find.

Camphor is synthesized from the hydrocarbon pinene, a turpentine derivative. It causes CNS depression and seizures, and its mechanism of action is unknown.[10] According to 2001 data from the American Association of Poison Control Centers Toxic Exposure Surveillance System (TESS), there were 8,505 exposures to camphor products most of which resulted in mild symptoms. Only 89 moderate to severe outcomes were reported with no deaths.[11] The food and drug administration banned the sale of oils containing concentrations greater than 11% camphor due to the

increased toxicity. Camphor may be used in natural or synthetic forms. It occurs naturally in the wood of the camphor tree (cinnamonum camphora), and is extracted by steam distillation and crystallization. Despite the lack of solid scientific data, It is a common over the counter remedy for high and low Blood pressure, respiratory ailments, cough, irregular heartbeat, as well as rheumatoid and osteoarthritis.

Toxic exposure to camphor has led to varying symptoms. Skoglund et al reported on convulsions in a small child following skin exposure to camphor spirit.[12] Hyperexciteable emotional state, somatic hallucinations, restlessness, anxiety, and agitation have also been reported.[13,14,15] Although the exact mechanism of camphor toxicity is unknown it does appear to have anti-inflammatory action and possibly acts in a similar way to corticotropic medications. Our patient's symptoms began soon after the use of the camphor patches and she remained symptomatic during the twenty years of use. Her history and medical workup revealed none of the known risk factors for CSCR. Her treatment has resulted in stabilization of her disease process and hopefully will remain so with the discontinuation of the camphor-impregnated dermal patches. This case could represent a new toxic affect of camphor as well as a previously undescribed cause of CSCR.

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