Dose: 75-100 mg / die

Razionale

- Effetto antiaggregante che contrasta:
  - aumento fattori procoagulanti nella CRSC
  - aumento aggregazione piastrinica indotto dagli steroidi

- Riduce il rilascio di cortisolo e catecolamine in risposta allo stress (Caccavale et al. Clin Ophthalmol 2011)
Central serous chorioretinopathy: a pathogenetic model

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Introduction

Despite numerous studies on this disease over the years, many aspects of central serous chorioretinopathy (CSCR) remain unclear. Perhaps the occurrence of the CSCR.

Keywords: central serous chorioretinopathy; PAI-1; PA, plasmin-α2-plasmin inhibitor (increased microthrombus formation and increased hematic viscosity); Increased platelet aggregation; Direct steroids vasoconstriction Indirect vasoconstriction mediated by sensitization to catecholamines; Suppression of local vasodilators such as prostacyclin and nitric oxide.

Relative endogenous hypercortisolism (or exogenous administration of corticoids)

Increased platelet aggregation
- PAI-1, - tPA, - plasmin-α2-plasmin inhibitor (increased microthrombus formation and increased hematic viscosity)

Direct steroids vasoconstriction
- Indirect vasoconstriction mediated by sensitization to catecholamines
- Suppression of local vasodilators such as prostacyclin and nitric oxide

Lead to

Reduced choroidal flow with impaired hemorheology and increased probability of microthrombus formation.

Lobular choriocapillaris hypoperfusion

Increased intraluminal pressure in the surrounding choriocapillaris (Hagen–Poiseuille's Law) with extravasation of serum and further tamponade of microvasculature

RPE DECOMPENSATION and DETACHMENT

CENTRAL SEROUS CHORIORETINOPATHY

(In cases of prolonged course of disease or when risk factors persist, CSCR can become chronic or multifocal)
... inoltre ...

- Work-up endocrinologico
  - Dosaggio cortisolo libero urinario
  - Visita endocrinologica

- Valutazione psichiatrica

- Disordini del sonno
Endocrine Abnormalities in Patients with Central Serous Chorioretinopathy

Robert Haimovic, MD; Shimon Rumelt, MD; James Melby, MD

**Purpose:** To investigate and to identify endocrine and metabolic abnormalities in patients with central serous chorioretinopathy (CSCR).

**Design:** Observational case series.

**Participants:** Twenty-four patients with CSCR.

**Methods:** Serum and urinary catecholamines, glucocorticoids, mineralocorticoids, serum testosterone, and thyroid-stimulating hormone (TSH) function were evaluated prospectively.

**Results:** Fifty percent (12 of 24) of patients with active acute CCSR showed elevated 24-hour urine cortisol or tetrahydroaldosterone levels. Serum aldosterone levels were low in 7 of 24 (29.1%) patients. Single morning plasma catecholamine levels were elevated in 7 of 24 patients, although 24-hour urine metanephrines (catecholamine breakdown products) were normal. Serum testosterone and TSH levels were normal in nearly all (23 of 24) patients.

**Conclusion:** Many patients with acute CCSR have elevated 24-hour urine corticosteroids, which may contribute to the pathogenesis of the disorder. Endogenous mineralocorticoid dysfunction is a newly described feature of CCSR. Ophthalmology 2003;110:698–703 © 2003 by the American Academy of Ophthalmology.

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**Table 1. Endocrine Abnormalities in Patients with Central Serous Chorioretinopathy**

<table>
<thead>
<tr>
<th>Endocrine Findings</th>
<th>No. of Patients (24 Patients)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cortisol</td>
<td></td>
</tr>
<tr>
<td>Elevated serum cortisol levels</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Elevated 24-hour urine cortisol</td>
<td>9 (38%)</td>
</tr>
<tr>
<td>Abnormal diurnal pattern of cortisol secretion</td>
<td>7 (29%)</td>
</tr>
<tr>
<td>Aldosterone and tetrahydroaldosterone</td>
<td></td>
</tr>
<tr>
<td>Elevated 24-hour urine THA</td>
<td>7 (29%)</td>
</tr>
<tr>
<td>Elevated 24-hour urine cortisol and THA</td>
<td>4 (17%)</td>
</tr>
<tr>
<td>Low serum aldosterone</td>
<td>7 (29%)</td>
</tr>
<tr>
<td>Adrenergic hormones</td>
<td></td>
</tr>
<tr>
<td>Elevated random plasma epinephrine</td>
<td>4 (16%)</td>
</tr>
<tr>
<td>Elevated random plasma norepinephrine</td>
<td>3 (13%)</td>
</tr>
<tr>
<td>Elevated 24-hour urine for metanephrines</td>
<td>0 (0%)</td>
</tr>
</tbody>
</table>

*Note:* Number of findings exceed patient numbers because of multiple abnormalities in some patients. THA = tetrahydroaldosterone.
TYPE-A BEHAVIOR AND CENTRAL SEROUS CHORIORETINOPATHY

LAWRENCE A. YANNUZZI, MD

A consecutive series of newly-diagnosed patients with central serous chorioretinopathy (CSC) was compared to two independent control groups chosen from the same patient population for the presence of a Type A behavioral pattern based on the Jenkins Activity Survey. The patients selected as matched controls had painless, reduced central vision and other chorioretinal diseases (Group I), or non-chorioretinal ocular conditions (Group II). The Type A behavior was significantly more frequent in study patients than in either Control Group I ($X^2 = 6.1$ and $P < 0.025$) or Control Group II patients ($X^2 = 17.7$ and $P < 0.001$). When both control groups were combined for comparison to the CSP patients, there was also a highly significant difference with regard to Type A behavior ($X^2 = 14.1$ and $P < 0.001$). A comparison of Control Group I with Control Group II revealed no significant difference in Type A behavior. Subfactor analysis of the Type A behavior pattern was also studied. The results of this clinical study were used in conjunction with experimental evidence linking catecholamines with CSP in developing a multifactorial etiologic hypothesis. The hypothesis suggests that the eyes as an organ system, and the macula as an ultimate target area, can be intermittently or continuously stimulated adversely by Type A behavior and its physiological consequences, most notably a sympathetic discharge. The multifactorial concept alludes to other potential risk factors such as age, race, sex, refractive state, or unknown tissue susceptibilities. The pathogenesis implies an inter-relationship between finely balanced components of a complex biopsychological system involving an individual's genetic endowment, his environment, and his behavioral pattern. The concept also offers new possible lines of investigation for the treatment of CSP, utilizing pharmacological regulators and for its prevention through early identification of CSP-prone individuals. A review of the pertinent cardiovascular literature linking the Type A behavior with coronary artery disease and the significant papers in the ophthalmic literature on central serous pigment epitheliopathy are included in the discussion.


Some of the clinical features of idiopathic detachment of the macula, or central serous chorioretinopathy (CSC), have been known since 1866, when von Graefe originally described the disorder which he named "relapsing central luetic retinitis." For more than a century thereafter, the syndrome has been referred to by a series of descriptive terms thought to be related to its pathogenesis, as well as its clinical and fluorescein angiographic manifestations. As early as 1927, personality traits and psychic disturbances were implicated as contributing or precipitating factors in the development of the disorder. Several studies alluded to to examine, in a quantitative and comparative fashion, specific behavioral patterns alleged to be associated with CSC.

The Type-A Behavior Pattern (TABP) is known to be an established risk factor for coronary heart disease (CHD). The major components of this multidimensional personality construct are: 1) a competitive drive, 2) a sense of urgency, 3) an aggressive nature, and 4) a hostile temperament. An individual exhibiting a simple preponderance of these personality traits is classified as Type-A; whereas a person who does not is categorized as either indeterminate or Type-B.
Horniker E. Su di una forma di retinite centrale di origine vasoneurotica. Ann Oftalmol 1927


Lipowski ZJ et al. Psychosomatic aspects of central serous retinopathy: a review and case report. Psychosomatics 1971
Psychosomatic aspects in patients with central serous chorioretinopathy

C Spahn, J Wiek, T Burger, L Hansen

4 questionari validati

37% dei pazienti: stress psichico elevato

Elevata instabilità emozionale ed insicurezza associate a flessibilità e spontaneità
Central Serous Chorioretinopathy Associated With Narcolepsy

Kim, Joan T MD*; Eichling, Philip S MD, MPH, FAASM†; Wang, Mingwu MD, PhD*

Abstract

Purpose: The purpose of this study was to describe a case of central serous chorioretinopathy (CSC) associated with narcolepsy.

Methods: Case report.

Results: A 34-year-old man was followed for persistent CSC in his left eye for more than 11 months. He did not have any known risk factors for CSC, including obstructive sleep apnea. However, he experienced disrupted sleep because of narcolepsy, which was inadequately treated. After 2 weeks of adequate treatment for his narcolepsy, fundus examination and optic coherence tomography demonstrated complete resolution of his CSC.

Conclusion: As this case report suggests, overactivation of the hypothalamic–pituitary–adrenal axis and sympathetic nervous system, seen with disrupted and poor quality sleep, may contribute to the development of CSC. Risk factors for CSC should include sleep disorders that can lead to chronic sleep deprivation.
PDT

Proposta nel 2003 da Yannuzzi

Principale indicazione: CRSC cronica

Razionale

Vasocostrizione coriocapillare

Reazione infiammatoria nello spazio sottoretinico > adesione neuroretina a EPR
PDT

Risultati a 4 anni (46 occhi di 42 pz. con CRSC >6 mesi) pubblicati nel 2012 (Silva et al Retina 2012)

- Miglioramento AV: 74%
- Peggioramento AV: 9%
- Riassorbimento liquido: 93%
- No assottigliam. neuroretina
PHOTODYNAMIC THERAPY FOR CHRONIC CENTRAL SEROUS CHORIORETINOPATHY

A 4-Year Follow-up Study

RUFINO M. SILVA, MD, PhD,*†‡‡ JOSE M. RUIZ-MORENO, MD, PhD,‡ FRANCISCO GOMEZ-ULLA, MD, PhD,§ JAVIER A. MONTERO, MD,¶ TATIANA GREGÓRIO, MD,*† MARIA L. CACHULO, MD,*† ISABEL A. PIRES, MD,*† JOSÉ G. CUNHA-VAZ,† JOAQUIM N. MURTA, MD*†‡‡

Purpose:
To evaluate the efficacy and safety of standard photodynamic therapy with verteporfin at 48 months in patients with chronic central serous chorioretinopathy.

Methods:
A retrospective, multicenter, interventional case series analysis in patients with chronic central serous chorioretinopathy, treated with standard photodynamic therapy, and with 4 years of follow-up. Evaluations were performed every 3 months in the first year, every 6 months in the second year, and thereafter annually. Optical coherence tomography was performed in all visits. Fluorescein angiography and indocyanine green angiography were performed at baseline and thereafter as necessary. Retinal thickness on optical coherence tomography was measured manually, evaluating central macular thickness and neural retina thickness. Main outcomes included the evolution of best-corrected visual acuity, the resolution of subretinal fluid, documented with optical coherence tomography, the number of treatments, and the evaluation of neural retina thickness during the 48 months of follow-up.

Results:
The study included 46 eyes of 42 patients, 38 men (90.4%) and 4 women (9.5%), with mean age of 49.19 ± 9.9 years (range, 32–70 years), and the minimal follow-up period was 48 months (mean, 56.8 ± 10.3 months). Subretinal fluid was observed in all the included eyes at baseline, and 10 eyes (21.7%) had intraretinal diffuse or cystoid fluid. Concerning the mean best-corrected visual acuity, a statistically significant improvement (P, 0.01, Student t-test) was registered from 58.8 ± 18.3 letters at baseline to 66.9 ± 18.6 letters at 48th month. Complete resolution of subretinal fluid was achieved in 93.4%, and resolution of intraretinal fluid occurred in all 10 cases at 48 months. Neural retina thickness remained stable during the 48 months of follow-up (163.8 ± 47.3 μm at baseline and 163.8 ± 46.3 μm at 48 months). The mean number of treatments was 1.08 ± 0.3. No systemic or ocular side effects were registered.

Conclusion:
Standard photodynamic therapy with verteporfin was effective and safe in chronic central serous chorioretinopathy treatment with a significant improvement in the long term, both anatomic and visual, without inducing additional retinal atrophy or systemic adverse effects.

RETINA 0:1–7, 2012

Central serous chorioretinopathy (CSC) is characterized by an idiopathic serous retinal detachment in the posterior pole associated with one or more leaks from the level of the retinal pigment epithelium (RPE). Gass proposed, in 1967, choriocapillaris hyperpermeability as the primary cause of CSC. Many years later, multiple reports described multifocal areas of choroidal vascular hyperpermeability in CSC patients, using indocyanine green angiography (ICG-A). Central serous chorioretinopathy usually resolves without treatment and has a good prognosis, with normal vision often returning within a few months. However, visual loss or permanent symptoms may occur in cases with persistent focal leakage or chronic diffuse leakage. Treatment should be considered after 3 months without resolution of acute CSC and in chronic CSC. A pilot study, performed by Yannuzzi et al in 2003, showed that ICG-A–guided photodynamic therapy (PDT) with verteporfin could be effective for treating chronic CSC. The rationale for verteporfin PDT is that angioocclusive treatment may lead to narrowing of choroidal vessels, thereby reducing choroidal exudation.
Necessità 2° trattamento PDT

- 8.6% (Silva et al Retina 2012)
- 15.9% (Ruiz-Moreno et al Acta Ophthalmol 2010)
- 12.5% (Cardillo Piccolino et al Retina 2003)
- 27.3% (Tarantola et al Lasers Surg Med 2008)

Ricomparsa liquido dopo osservazione o laser focale: 40%
Altri studi hanno riportato casi di

- Atrofia EPR (Cardillo Piccolino et al Retina 2003)
- Neovasi coroideali (Chan et al BJO 2003, Colucciello Retina 2006)
- Ischemia coriocapillare
- Riduzione transitoria funzione maculare (scotoma soggettivo x 2 gg, elettrofisiologia)
Dosaggi tradizionali = rischio di ulteriore danno all’EPR

Metà dose

Metà fluenza

Ciardella
<table>
<thead>
<tr>
<th></th>
<th>Dose piena</th>
<th>Metà fluenza</th>
<th>Metà dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluenza</td>
<td>50 J / cm²</td>
<td>25 J / cm²</td>
<td>50 J / cm²</td>
</tr>
<tr>
<td>Dose</td>
<td>6 mg / m²</td>
<td>6 mg / m²</td>
<td>3 mg / m²</td>
</tr>
</tbody>
</table>
No differenze fra PDT standard e metà fluenza per:

- Riassorbimento liquido (100% vs 94.1%)
- AV
- Spessore fovea (Stratus OCT)

★ Minore ipoperfusione coriocapillill.

(Shin et al Retina 2011)
No differenze fra PDT standard e metà fluenza per:

- Riassorbimento liquido (79% vs 91%)
- AV

★ Migliori dati alla microperimetria con metà fluenza

(Reibaldi et al AJO 2011)
PDT metà influenza

Utilizzata con successo anche nella CRSC acuta

100% riassorbimento liquido a 1 mese e fino a 12 mesi

Nessuna complicanza retinica

(Smretschnig et al Retina 2012)
PDT metà dose:
- Utile nella CRSC cronica
- Riassorbimento liquido: 85% a 1 mese e 89.6% a 12 mesi
- Miglioramento AV da 20/40 a 20/30
- Risultati peggiori negli occhi con distacco EPR

PDT metà dose:
- Rischio recidiva in circa 10% casi
- Recidiva distacco EPR >20% entro un anno

(Shinojima et al. Retina 2011)
PDT *metà dose:*
- Utile anche nella CRSC acuta

Mi
gliori risultati vs. Placebo per:
- Riassorbimento liquido (95% vs 58%)
- AV

(Chan et al Ophthalmology 2008)
Domande

Quale dei 3 regimi è il migliore?

Risultati migliori se la CRSC è trattata prima (fase acuta)?

Risultati peggiori se ICGA non mostra aree di iperpermeabilità della coroide?
Conclusioni

- PDT: terapia più studiata e con migliori risultati. Complicanze rare
- Avastin: pochi studi e molti dubbi
- Farmaci: pochi studi e poche prove...