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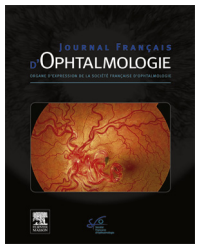

ORIGINAL ARTICLE

Long-term results of low-fluence photodynamic therapy for chronic central serous chorioretinopathy

Résultats à long terme de la photothérapie dynamique en fluence réduite pour les choriorétinites séreuses centrales chroniques

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Choroidal vascular hyperpermeability;
Macular neurosensory detachment;
Serous retinal detachment;
Verteporfin

Summary
Purpose. — To evaluate long-term results of low-fluence photodynamic therapy (PDT) with verteporfin in the treatment of chronic central serous chorioretinopathy (CCSC).
Methods. — Retrospective medical record review of 38 eyes (34 patients) who received low-fluence PDT for the treatment of CCSC. Visual acuity (VA), fundus biomicroscopy, fluorescein angiography (FA), indocyanine green angiography (ICG) and optical coherence tomography (OCT) were analyzed.
Results. — Thirty-eight eyes (34 patients) with CCSC received low-fluence PDT. Mean follow-up after PDT was 43.97 months. Mean logMar best corrected VA (BCVA) improved significantly from 0.33 to 0.11 at the last follow-up which corresponds to a gain of 2.2 lines. At 3 months, complete resolution of central subretinal fluid was achieved on OCT after 1 PDT in 37 eyes and after 2 PDTs in 1 eye (retreated at 3 months after first PDT). One patient developed choroidal neovascularization (CNV) 4 years after his low-fluence PDT and received anti-vascular endothelial growth factor (VEGF) injections.

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Conclusion. — Low-fluence PDT with verteporfin for CCSC seems efficacious and safe in the long-term.

MOTS CLÉS
Choriorétinite séreuse centrale chronique ;
Fluence réduite ;
Photothérapie dynamique ;
Hyperperméabilité choroïdienne ;
Décollement séreux rétinien ;
Vertéporfine

Résumé
Objectifs. — Évaluer les résultats à long terme de la photothérapie dynamique (PDT) par vertéporfine en fluence réduite dans le traitement des choriorétinites séreuses centrales chroniques (CRSCC).
Méthode. — Étude rétrospective incluant 38 yeux (34 patients) ayant reçu un traitement par PDT en fluence réduite pour une CRSCC. L'acuité visuelle (AV), le fond d'œil, l'angiographie à la fluorescéine (FA), l'angiographie au vert d'indocyanine (ICG) et la tomographie par cohérence optique (OCT) ont été analysés.
Résultats. — Un traitement par PDT en fluence réduite a été réalisé dans 38 yeux (34 patients). Le suivi moyen après la PDT était de 43,97 mois. Une amélioration significative de l'acuité visuelle moyenne en LogMar a été notée en passant de 0,33 avant traitement à 0,11 à la dernière visite et représente un gain de ligne de 2,2. Une disparition complète du décollement séreux rétinien fut démontrée sur l'OCT 3 mois après traitement après 1 séance dans 37 yeux et après 2 séances dans 1 œil (la seconde PDT ayant été réalisée 3 mois après la première chez ce patient). Un patient a développé des néovaisseaux choroïdiens 4 ans après son traitement par PDT et a bénéficié d'injections intravitréennes d'anti-VEGF.
Conclusion. — La PDT en fluence réduite pour les CRSCC est un traitement sûr et efficace à long terme.

Introduction

Central serous chorioretinopathy (CSC) is an idiopathic disease characterized by a macular detachment of the neurosensory retina. The etiology of this disease remains unclear and many theories have emerged since the 1960s. Early studies based on fluorescein angiography showed that the macular detachment resulted from a leakage in the retinal pigment epithelium (RPE) due to a breakdown of the external blood retinal barrier. Recently, Indocyanine green angiography (ICGA) has improved the understanding of this disease by describing the choroidal circulation. ICGA shows a delay in choroidal arteries and choriocapillaris circulation causing an ischemic stress which can lead to venous congestion and choroidal hyperpermeability [1]. A disruption in the continuity of the detached RPE would then permit a leakage of the choroidal exudate [2—4]. Although the precise physiopathology of this condition remains unknown, corticosteroids either endo- or exogenous have demonstrated their importance in this condition [5,6]. The latest studies suggest that an elevation of catecholamins or an overaction of the mineralocorticoid pathway could result in a vasodilatation and hyperpermeability of the choroidal vessels [7]. Since a few years, enhanced depth imaging optical coherence tomography (EDI-OCT) has also demonstrated its role in completing the analysis of this choroidal disease by showing an increase in choroidal thickness and lumen area of abnormal choroidal vessels [8].

CSC is also known to be associated with male gender, pregnancy, stress, Cushing's syndrome, steroid-producing tumors and type A personality [9,10].

Acute CSC usually resolves spontaneously in 3 to 4 months and patients have a good visual prognosis [11]. However, 15 to 50% tend to develop recurrent or persistent detachment [11—13].

The long lasting detachment of the neurosensory retina combined with the decompensation of the RPE may lead to cystoid macular degeneration, foveal atrophy and damage of the photoreceptor layer with an irreversible significant vision loss of 3 lines or more in 15% to 50% of cases [14—16].

Presently, photodynamic therapy (PDT) with verteporfin and thermal laser photocoagulation (TLP) remain the best treatment options. Many studies suggest that TLP is mainly effective in acute CSC demonstrating a clear extra foveal focal leakage on FA as it offers a more rapid absorption of subretinal fluid. However, TLP can cause inadvertent coagulation of the fovea, iatrogenic RPE damage, permanent scotoma, scar formation and CNV [17,18]. On the other hand, PDT shows good anatomic and functional results in CCSC. Spaide et al. gave a well accepted definition of ''chronic'' CSC characterized by a serous macular elevation, visible microscopically or detected by OCT, that is associated with subtle leaks of ill-defined staining of retinal pigment epithelium on FA [4]. ICGA then shows a characteristic pattern of multifocal patchy hyperfluorescence best seen in the midphase of the ICG with dispersion of the dye