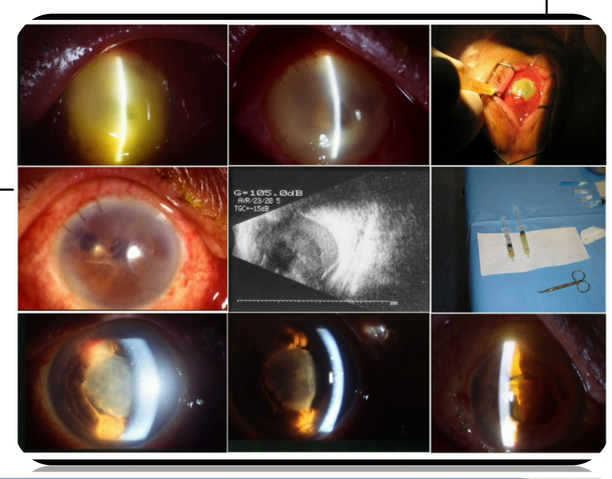
56704

Longitudinal study of retinal status using optical coherence tomography after acute onset endophthalmitis following cataract surgery

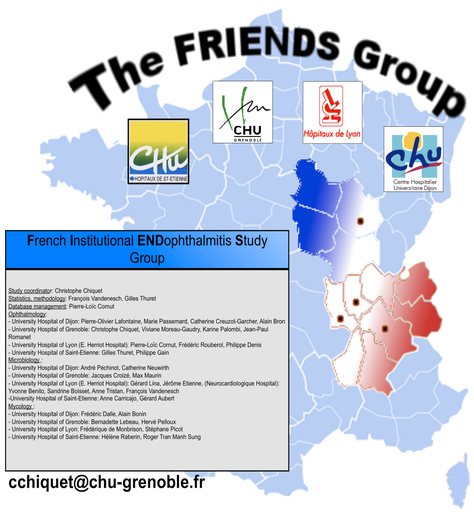
Thierry Zhou,[1,2] Florent Aptel,[1,2] Alain M Bron,[3] Pierre-Loïc Cornut,[4] Karine Palombi,[1,2] Gilles Thuret,[5] Frédéric Rouberol,[6] Catherine Creuzot-Garcher,[3] Christophe Chiquet[1,2]

[1] Grenoble Alpes University -Grenoble 1, Grenoble, France
[2] Department of Ophthalmology, University Hospital of Grenoble, Grenoble, France
[3] Department of Ophthalmology, University Hospital, Dijon, France
[4] Department of Ophthalmology, University Hospital Edouard Herriot, University Lyon I, Lyon, France
[5] Department of Ophthalmology, University Hospital, Saint-Etienne, France
[6] Kleber Center, Ophthalmology, Lyon, France
Financial interests: none



Background

The aim of this study was to **analyze the macular status imaged by optical coherence tomography (OCT) in patients treated for acute post-cataract endophthalmitis.**



cchiquet@chu-grenoble.fr

Patients & Methods

Patients presenting with an acute post-cataract endophthalmitis were included in this **observational and multicenter study** (FRench Institutional ENDophthalmitis Study group) from January 2008 to December 2013.
A Time Domain (TD, (Stratus™; Carl Zeiss Meditec, Inc.) or a **Spectral Domain** (SD, Spectralis; Heidelberg Engineering™, Heidelberg, Germany , Cirrus™; Carl Zeiss Meditec, Inc.) OCT was performed at each visit. Each patient was followed using the same OCT machine **over 12 months** (25 with SD-OCT and 21 with TD-OCT). Cirrus measurement was defined as the reference measurement, and we used the conversion table to convert stratus (Cirrus = Stratus × 1 + 55.6) and Heidelberg measurements (Cirrus = Spectralis x 0.8 + 36.4) into cirrus CMT (Giani A, Cigada M, Choudhry N, et al. Reproducibility of retinal thickness measurements on normal and pathologic eyes by different optical coherence tomography instruments. Am J Ophthalmol 2010;**150**(6):815-24).

Results

• **46 patients** with a regular follow-up at month 3, 6 and 12 (M3,M6,M12) were included in the OCT analysis.

• **Epiretinal membrane** (ERM) prevalence has increased from 26% at M3 to 39% at M12. Eyes with an ERM exhibited increased central macular thickness (p=0.001) and lower visual acuity (VA) (Mean LogMAR: 0.4 ± 0.4 versus 0.12 ± 0.2, p=0.02) at M12 in comparison to the group with normal macula. There was a significant association between ERM and the alteration of the ellipsoid band (p=0.02), and the external limiting membrane (ELM, p=0.07) at M12.

• **Vitreomacular traction** (VMT) prevalence decreased from 12% at M3 to 6% at M12.

• **Non-tractional macular edema** (ME) prevalence varied between 7% and 13%, and was associated with capsular rupture at the time of the cataract extraction. (p=0.03)

• **Macular Thinning** remained stable at 10%

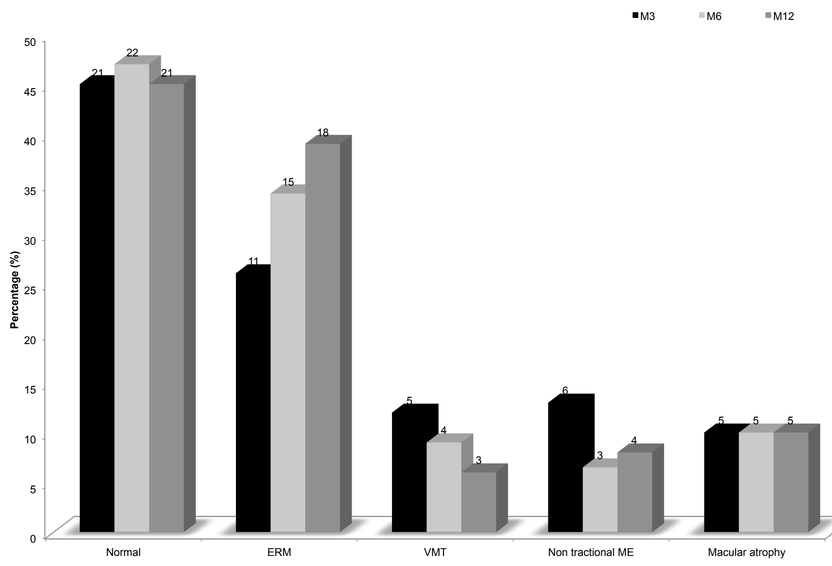
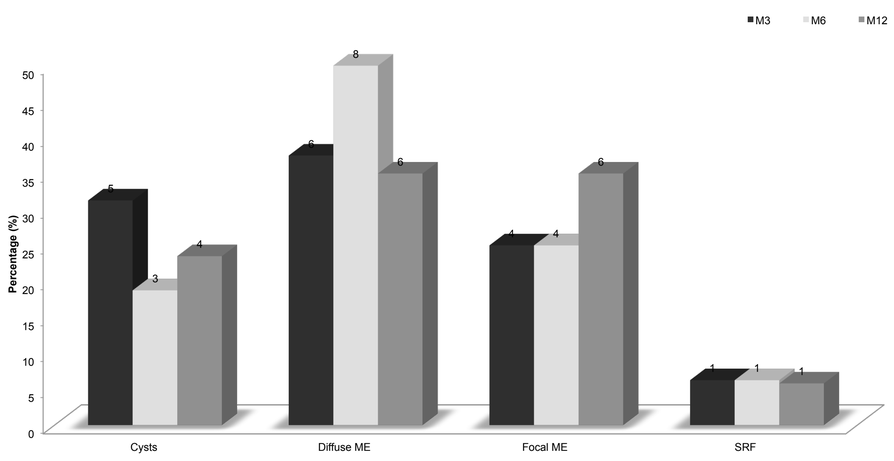


Figure 1: OCT macular status at month 3 (n=46), 6 (n= 46) and 12 (n=46).

ERM: epiretinal membrane; VMT: vitreomacular traction; ME: macular edema; SRF: subretinal fluid;



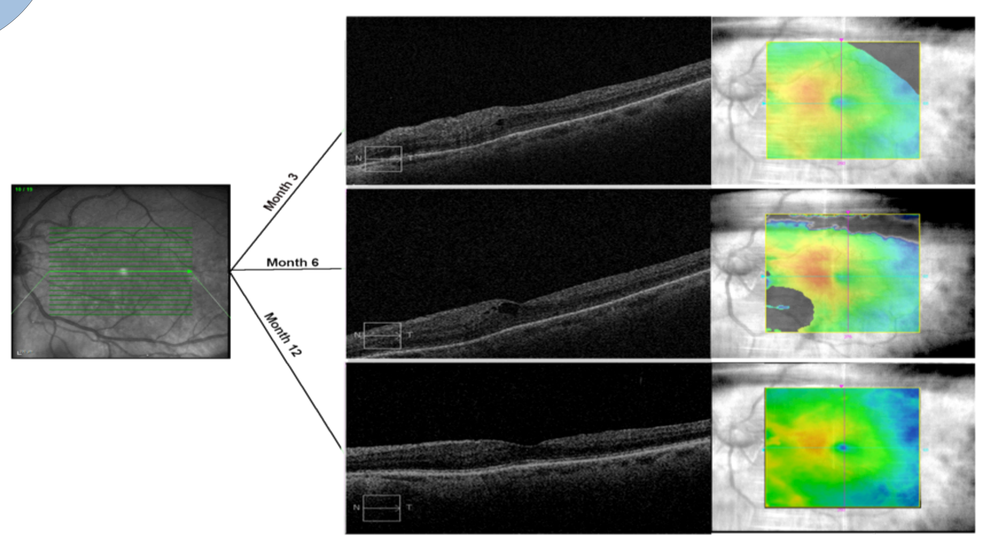


Figure 2: Characteristics of macular edema at M3 (n=16), M6 (n=16) and M12 (n=17) visits.

Figure 3: Evolution of non-tractional macular edema in a patient at month 3, 6 and 12.
a: thickening of foveal region with cysts in the outer retinal layer;
b: focal macular edema with intraretinal cyst;
c: persistent focal macular thickening in the interpapillo-macular region

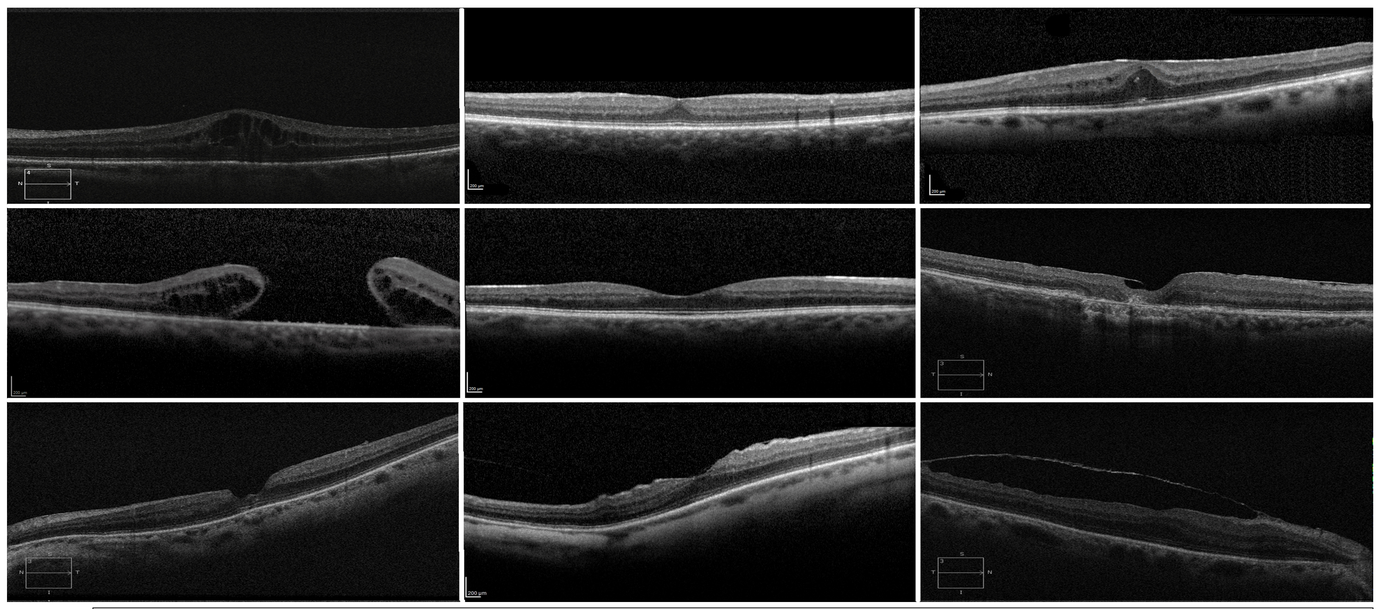


Figure 4: Panel of different macular status found in this study in spectral domain Optical Coherence Tomography.
a: cystoid macular edema; b: loss of foveal depression; c: diffuse macular edema; d: full thickness macular hole; e: normal macula; f: macular atrophy; g: macular pseudo hole; h: epiretinal membrane; i: vitreo-macular traction.

Conclusion

Most patients with **macular edema** were diagnosed at the M3 visit, whereas there was an increase in the prevalence of ERM over time. **Epiretinal membrane and macular edema** are the main OCT abnormalities diagnosed after one year of follow-up with a final VA ≥ 20/40 in 50% of the patients. **Ultrastructural abnormalities of the ELM and EZ** were frequently observed in those patients.

Grants: The authors would like to thank the Health Ministry (PHRC, French public program of clinical research), AFAU (French association of unilateral amblyopia), ARFO (Association for Research in Ophthalmology, Grenoble) and THEA laboratory for their support