

MICROPULSE LASER, A TREATMENT OPTION IN CHRONIC CENTRAL SEROUS CHORIORETINOPATHY

Dr Usha Shree K
DNB, FVRS

Dr Sribhargava Natesh
DNB, DOMS, FMRE,
Fellow Ocular Oncology, Vitreoretina Chief

NETHRA EYE HOSPITAL BENGALURU



Introduction

- Fourth most common retinopathy
- Male gender
- 2nd to 4th decade
- No proven pathophysiologic mechanism
- Hyperpermeable choriocapillaries, pachychoroid, RPE dysfunction

Chronic CSCR

- By definition, any persistent subretinal fluid for more than 6 months is considered as chronic CSCR.
- Again, duration is inconsistent, many studies

quote 3 -6 months as chronic CSCR. *Yannuzzi LA. Central serous chorioretinopathy: a personal perspective. Am J Ophthalmol 2010; 149: 361–363.*

Etiology and risk factors

- Endogenous or exogenous hypercortisolism
- Stress, Type A personality
- H pylori infection
- Obstructive sleep apnoea
- Pregnancy
- Alcoholism

Cause of visual loss in CSC

- Foveal attenuation
- Chronic macular edema
- Foveal photoreceptor damage

Diagnostic

procedures

- Fundus fluorescein angiography
- Optical coherence tomography
- Enhanced depth imaging OCT
- Fundus autofluorescence

Management

- Observation
- Mineralocorticoid antagonist
- Aspirin
- H pylori treatment
- Laser photocoagulation
- Photodynamic therapy
- Subthreshold micropulse laser

Micropulse laser

- 577nm yellow laser in micropulse mode to produce a therapeutic response without retinal damage.
- Current study investigates role of micropulse laser in chronic CSCR

Purpose of the study

- To study the safety and efficacy of micropulse laser in chronic CSCR as a treatment option

Materials and methods

- Retrospective observational case series
- 12 eyes of 12 patients
- OCT done prior to and at 1 and 3 months post micropulse laser therapy
- Outcomes studied were mean visual acuity gain and mean reduction in subretinal fluid height.

Inclusion

exclusion

- Inclusion criterion: Any CSCR more than 3 months duration, post observation or medical line of management
- Exclusion criterion: Acute CSCR

Post lasered CSCR

Micropulse parameters

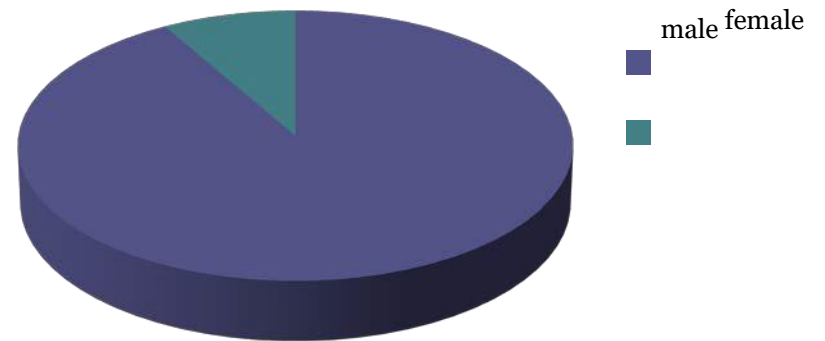
Pattern	Multispot , 4 x 4 grid
Spot size	200 micron
Energy	400 milli watt
Duration	200 milli seconds
Duty cycle	5 %
Interval	Confluent burns

Results

- Total no of eyes : 12

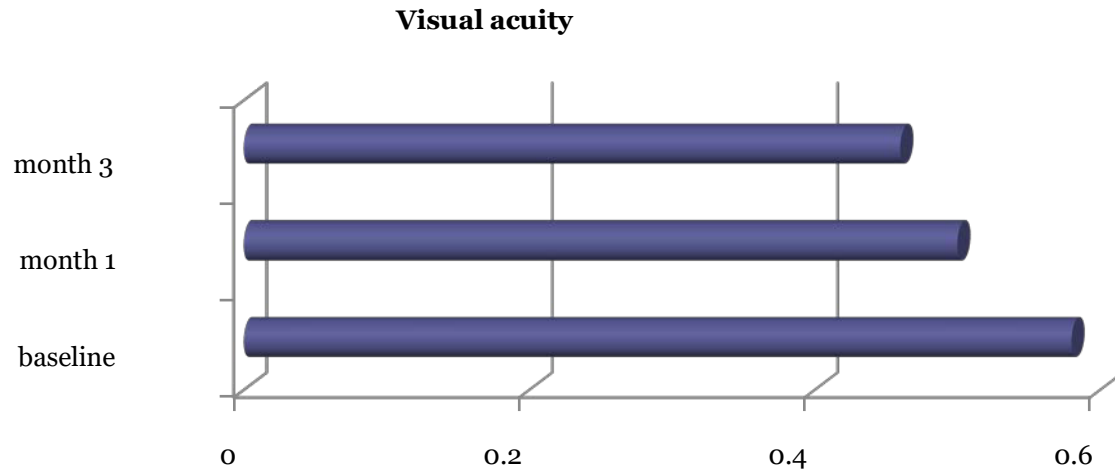
- Male 11

- Female 1



Mean visual acuity

- Baseline 0.58 log Mar
- At month 1 0.5 log Mar
- At month 3 0.46 log Mar

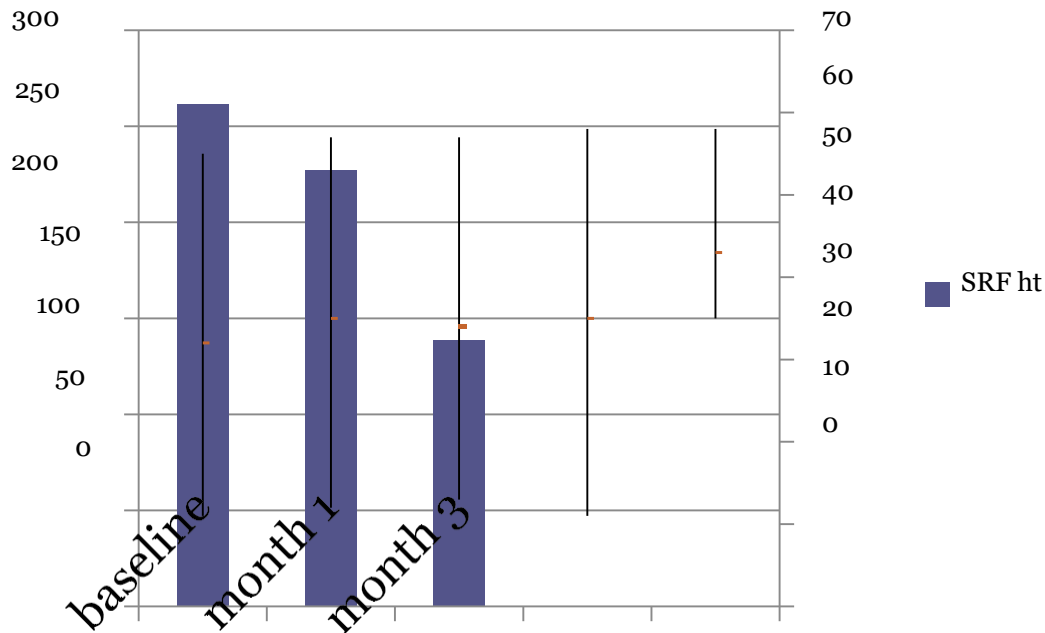


Mean

SRF

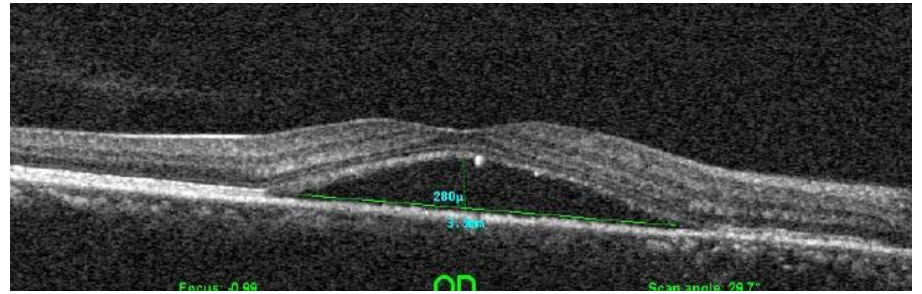
ht

- Baseline
570 micron) 261.42 (30-
- At month 1
(0-670 micron) 227.1
- At month 3
670 micron) 138.42 (00-

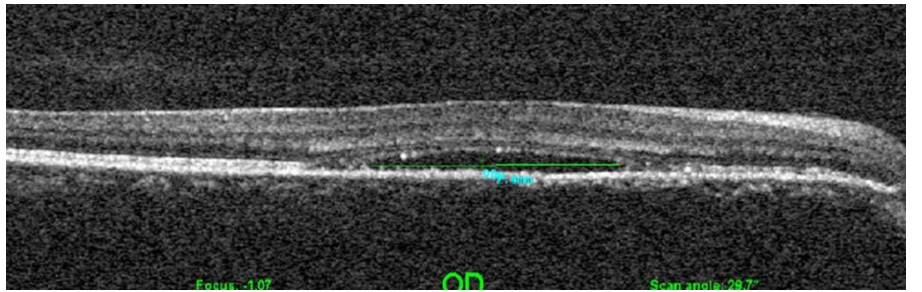


CASE 1

43 years male , reduced vision >4
months duration , vision 6/12

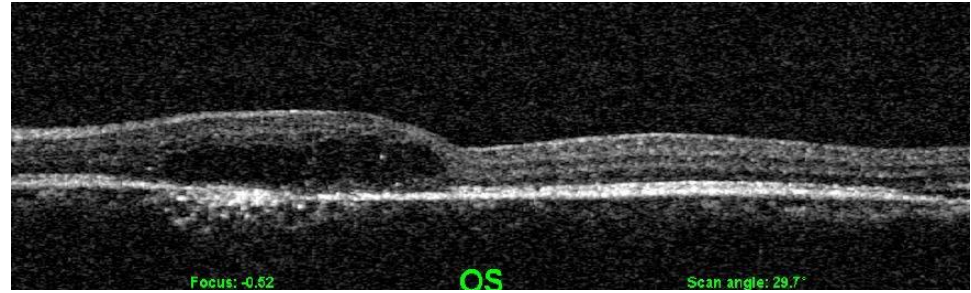
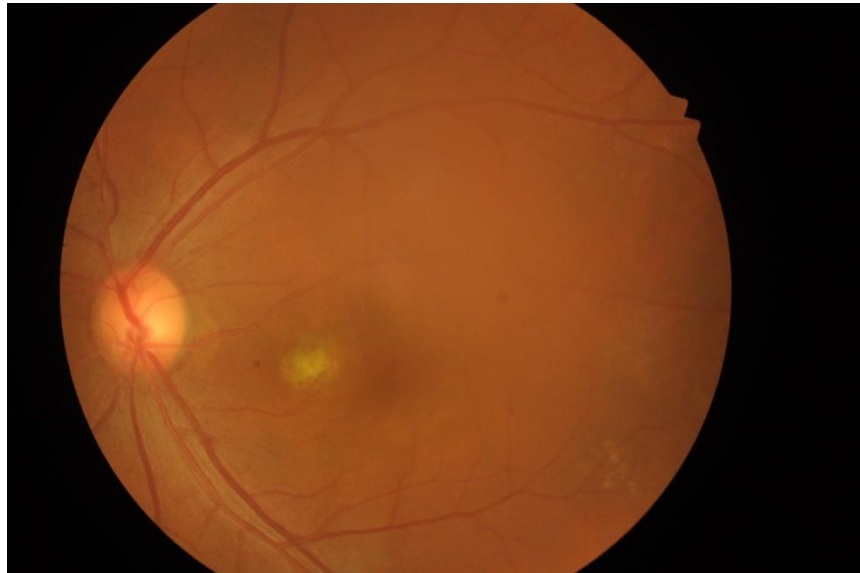


Post micropulse 3 months , vision 6/9

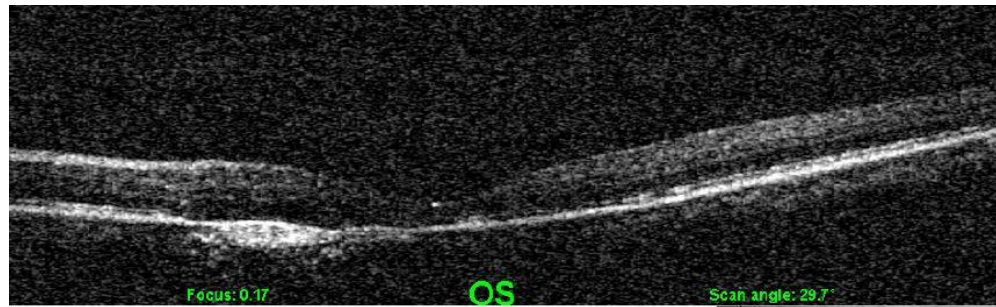


CASE 2

47 years male , reduced vision >3
months duration , vision 6/18

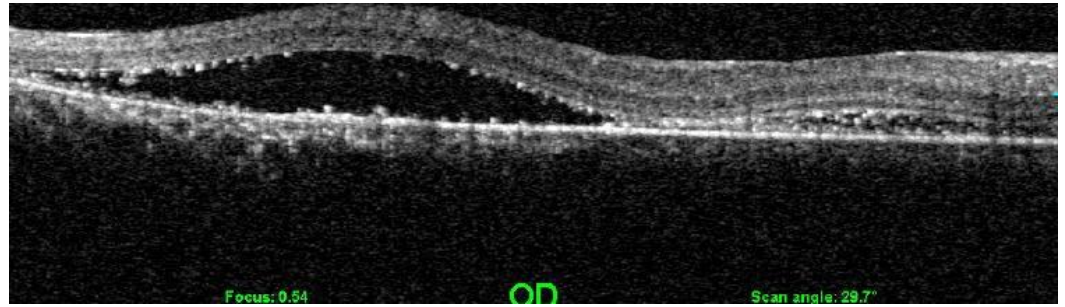


Post micropulse 3 months, vision 6/12

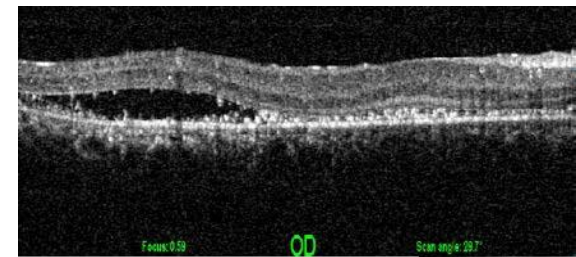
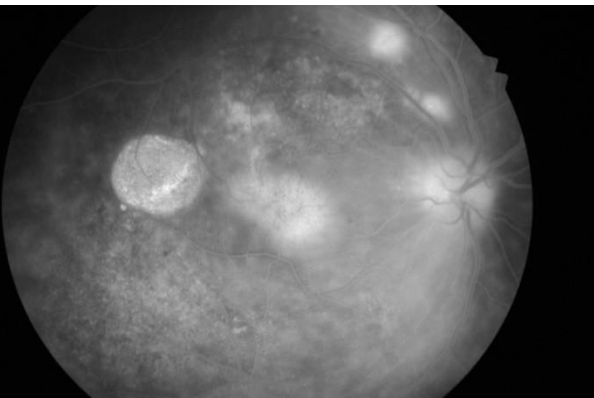


CASE 3

Male 25 years ,reduced vision >3 months
,Vision counting finger 1 meter

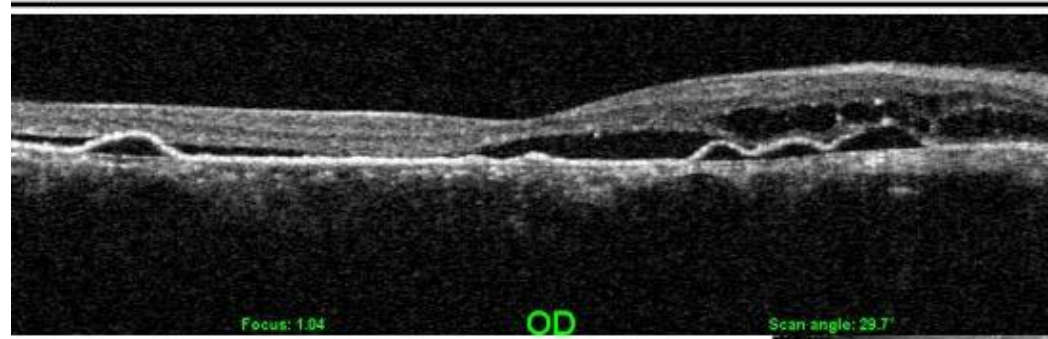


Post micropulse 3 months , vision 6/36

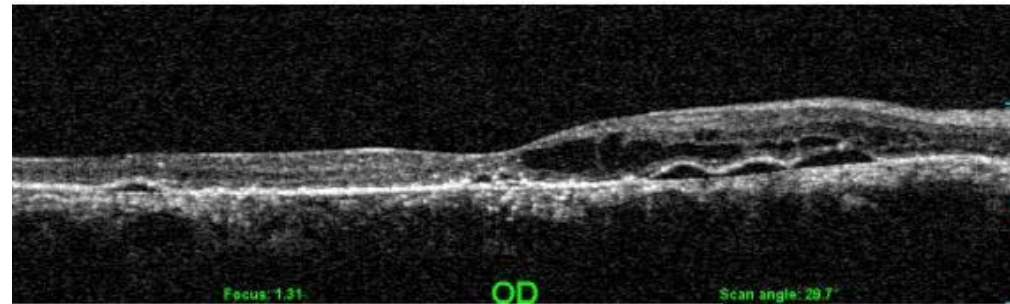


CASE 4

48 years male , reduced vision >6 months duration , vision 6/36



Post micropulse 3 months , vision 6/24



Efficacy

12 eyes		
Complete resolution	3 EYES	(25%)
Significant reduction	6 EYES	(50%)
No resolution	3 EYES	(25%)

Pigments

absorbing

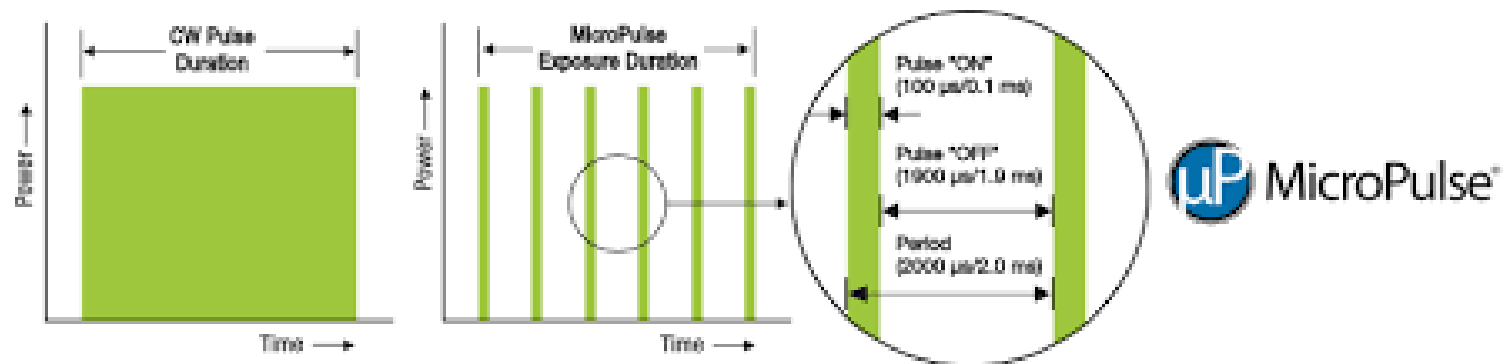
light

at

macula

Xanthophyll	Neurosensory retina	420-500 nm
Melanin	RPE cells, choroidal melanocytes	400-1000nm
Hemoglobin	Red blood cells,	450-550 nm

MICROPULSE LASER



Low

intensity high

density

laser

- Lower energy levels aiming to cause sub lethal injury to targeted RPE
- In micropulse mode, laser delivered in ultra- short pulses(microseconds) that are shorter than the thermal relaxation time of the target tissue.

- Longer the OFF time between pulses, lower the

duty cycle

- Burst of “envelope “ of micropulses instead of a single pulse.
- Reduces collateral damage.
- Repetitive micropulses summate to produce desirable therapeutic effects.

Drawbacks

Conventional laser

- Central or paracentral scotoma
- Contrast sensitivity loss
- Accidental foveal damage
- Retinal distortion
- Choroidal neovascularization

Photodynamic therapy

- RPE atrophy
- Choroidal hypoperfusion
- Choroidal neovascularization
- Transient macular function reduction

Subthreshold micropulse laser treatment in chronic CSCR

Scholz ,Ersoy,Boon C J ,Fauser S ; OPTHALMOLOGICA , 2015;234(4):189-94.

- 38 Patients – 577nm micropulse laser
18 patients with persistent fluid after PDT
- Follow up – 74 % responded to the therapy
In subgroup of PDT – 61% responded
- In conclusion SML – effective even in patients without sufficient improvement after PDT
- In our study 75 % patient showed significant reduction in fluid.

Subthreshold micropulse yellow laser treatment in chronic CSCR

Yadav NK , Jayadev C, Mohan A, Vijayan P, Dabir S, Shetty B :2015 feb ;29(2):258-64

- Retrospective analysis
15 eyes of 13 patients with CSCR >3 months
SML -10% duty cycle – focal and diffuse area
- Follow up – 8 weeks
79% average reduction in height
- In our study with 5% duty cycle 75 % showed reduction in SRF height.

POST LASER

- No retinal pigment epithelial changes
- No inflammation or exudative retinal detachment
- No retinal damage or burns clinically noticeable
- No cases of retinal pigment epithelial rip

Conclusion

Micropulse laser is an effective and safe treatment option in the management of chronic central serous chorioretinopathy.



THANK YOU



Nethra Eye Hospital