Ocular Manifestations in COVID-19

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The Window to the Soul…and systemic pathology

Ocular involvement

1. Conjunctiva
2. Retina
3. Macular degeneration
4. Neuropathies

Conjunctiva

- 38 pts (9-15 Feb 2020) 5th edition of the National Guideline on Prevention and Control of the Novel Coronavirus Pneumonia (PC-NCP)
- 28/38 pts (73.7%) had nasopharyngeal RT-PCR + results
- Only 2/28 (5.2%) had nasopharyngeal and conjunctival + PCR results
- 12 pts (31.6%) had ocular involvement:
  - Conjunctival hyperaemia, chemosis, epiphora and increased secretion
- Ocular involvement correlated with:
  - ↑ WCC and Neutrophils
  - ↑ procalcitonin
  - ↑ CRP
  - ↑ LDH

Characteristics of Ocular Findings of Patients With Coronavirus Disease 2019 (COVID-19) in Hubei Province, China
Ping Wu, MD1; Fang Duan, MD2; Chunhua Luo, MD1; et alQiang Liu, MD1; Xingguang Qu, MD1; Liang Liang, MD1; Kaili Wu, MD2

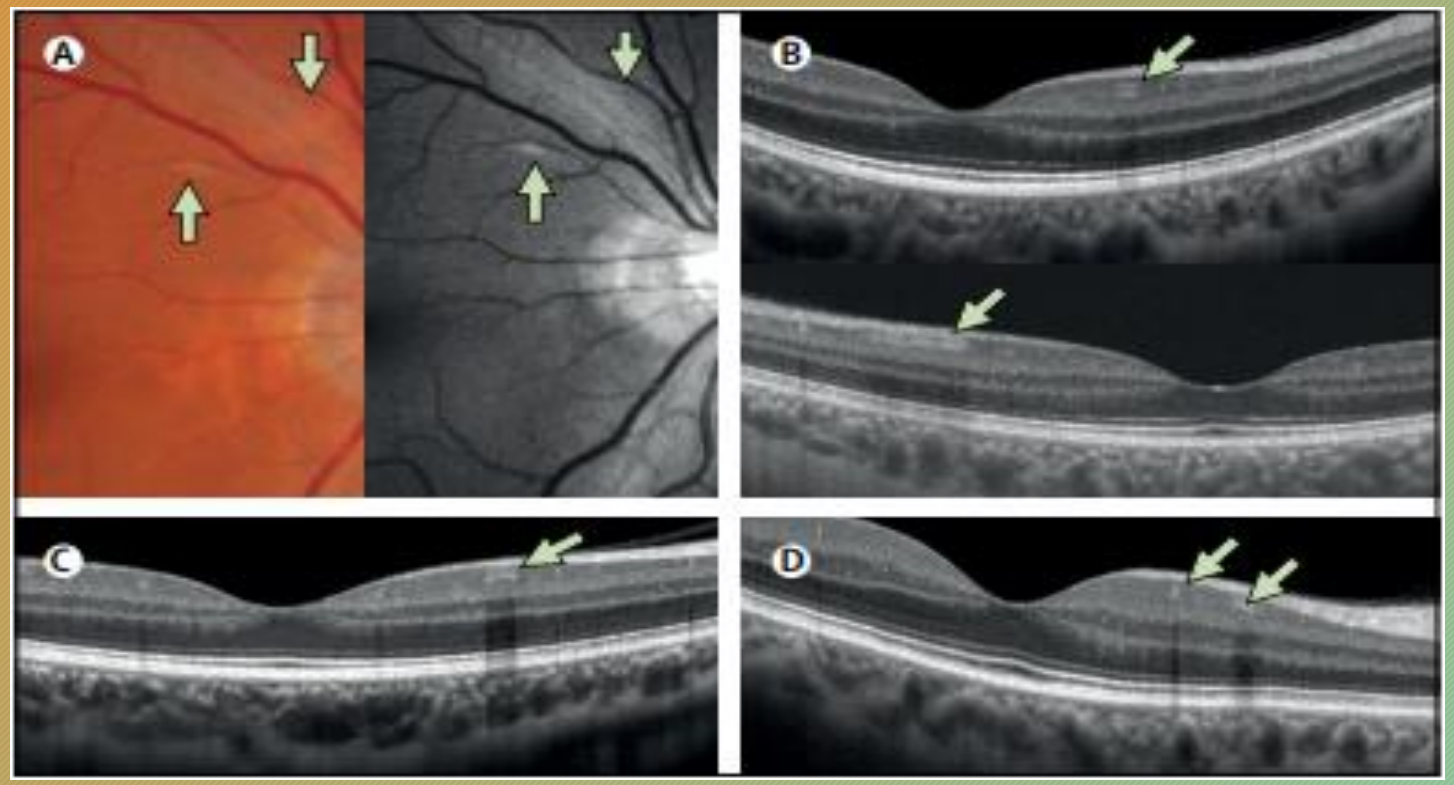
JAMA Ophthalmol. 2020;138(5):575-578. doi:10.1001/jamaophthalmol.2020.1291

Retina

- Sao Paulo, Brazil
- 12 adults (6 male, 6 female aged 25-69)
- 9 physicians, 2 healthcare workers
- 9/12 (75%) had PCR + results
- Symptoms: Fever, asthenia, dyspnoea (100%), anosmia (92%)
- Retinal OCT results:
  - Hyperreflective lesions Ganglion Cell Layer and Inner Plexiform Layer (100%)
  - Cotton wool spots and microhaemorrhages (33%)

Retinal findings in patients with Covid-19.
Paula M Marinho, Allexya A A Marcos,André C Romano, *Heloisa Nascimento,Rubens Belfort Jr
The Lancet; published online May 12 2020. DOI: 10.1016/S0140-6376(20)31014-X

Retinal OCT



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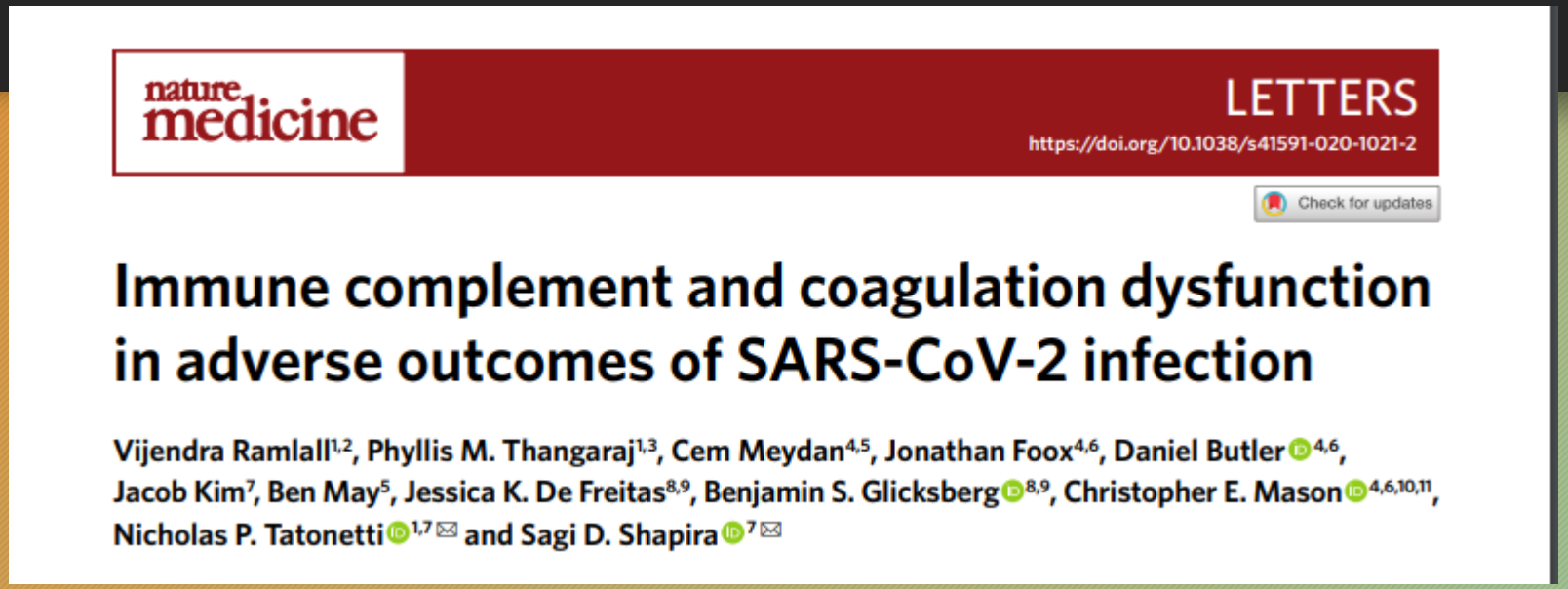
Macular Degeneration



nature medicine

LETTERS

https://doi.org/10.1038/s41591-020-1021-2

Check for updates

Immune complement and coagulation dysfunction in adverse outcomes of SARS-CoV-2 infection

Vijendra Ramlall[1,2], Phyllis M. Thangaraj[1,3], Cem Meydan[4,5], Jonathan Foox[4,6], Daniel Butler[4,6], Jacob Kim[7], Ben May[5], Jessica K. De Freitas[8,9], Benjamin S. Glicksberg[8,9], Christopher E. Mason[4,6,10,11], Nicholas P. Tatonetti[1,7] ✉ and Sagi D. Shapira[7] ✉

- 11,116 pt data retrospectively analysed. 88 AMD pts identified
- Ave mortality = 8.5% vs 25% in AMD
- AMD and Coagulation disorders found to be independent risk factors for increased morbidity & mortality in Covid-19
- AMD is proxy for Complement activation disorders (Hyperactivity)

Cranial Neuropathies

1. Case 1 (Weill Cornell Medical College, NY)

- 36 yr male presenting with:
  - Left ptosis and diplopia
  - Peripheral paresthesia of lower extremities
- Covid-19 symptoms started 4 days prior to ocular complaints
- SARS-CoV-2 PCR +
- Ocular exam:
  - Left mydriasis
  - Mild Ptosis
  - Decreased infra- and adduction → CN III palsy
  - Bilateral abduction deficits → CN VI palsy

COVID-19 presenting with ophthalmoparesis from cranial nerve palsy
Marc Dinkin et al.
Neurology; published online May 1,2020. DOI: 10.1212/WNL.0000000000009700

Cranial Neuropathies – Case 1 cont.

- MRI findings:
  - Enlargement
  - T2 hyperintensity
  - Enhancement

  } Left CNIII only, no CN VI abnormalities reported
- ? Miller Fisher syndrome
  - Rx: Immunoglobulin (2g/kg x 3/7)
  - Hydroxychloroquine 600mg bd x 1/7, then 400mg dly x 4/7
- Partial improvement of symptoms prior to discharge three days later

Cranial Neuropathies

2. **Case 2** (Weill Cornell Medical College, NY)

- 71 yr female presented wit 2/7 hx painless diplopia and right abduction deficit
- SARS-CoV-2 PCR +
- Systemic:
  - Coughing
  - Fever
- Ocular:
  - Normal VA, Pupils and Fundoscopy exam

Cranial Neuropathies – Case 2 cont.

- S/I:
  - WCC = 9.2 x 103 /µl, Lymph = 0.5 x 103/µl
  - LP = Normal with OP 16cm H2O
  - MRI = enhancement of Optic Nerve sheaths and posterior Tenon capsules
- No specific treatment was given
- Mild improvement of diplopia 2 weeks later as reported by pt over telephonic consultation

COVID-19 presenting with ophthalmoparesis from cranial nerve palsy
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Conclusion

- Ocular involvement reported in 30% of pts with Covid-19
- Associated with moderate to severe infections
- Macular degeneration is significant risk factor for poor outcome
- Multiple layers of the eye involved
- No specific treatment for Covid-19 ocular conditions indicated at present
- Limited data and small sample sizes reduces the reliability of the data – more research needed
- Consultation with Ophthalmology still required – need to exclude other causes of ocular symptoms