

Pediatric Ocular Conditions-Guidelines for Treatment during COVID 19 Pandemic

Meenakshi Wadhvani^{1*} and Kulbhushan Gangwani²

¹MS Ophthalmology, Assistant Professor, Chacha Nehru Bal Chikitsalya, New Delhi, India

²Consultant Pediatrician, RB Medical Centre, Delhi, India

*Corresponding Author: Meenakshi Wadhvani, Assistant Professor and Officer in Charge Ophthalmology, Chacha Nehru Bal Chikitsalya, New Delhi, India.

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Abstract

Covid-19 caused by SARS COV-2, is associated with neurological and ophthalmological manifestations. It is one the largest global pandemic affecting over 3 million people in 213 countries worldwide. It has led to a death toll of > 200 thousand people in a short period of 4 months as per WHO on May 1st 2020. India has reported over 33,000 cases with > 1000 deaths [1,2].

Keywords: Covid-19; SARS COV-2; Pediatric Ocular Conditions

Important guidelines in Covid era for pediatric ophthalmologists

WHO guidelines recommend in addition to routine standard precautions in the form of personal protective equipment (PPE) that includes gloves, face shield, N 95 mask and PPE dress that all health care workers (HCW) use against possible droplet and physical contact when caring or examining for any patient suspected or confirmed of covid 19 infection. Additional precautions must be taken while doing aerosol generating procedures (AGPS) (Figure 1a-1d).

These AGP's are defined as procedures that lead to generation of airborne particles specially when a child cries forcefully. This problem becomes all the more important in case of small children who cry and also according to ICMR/WHO children below 2 years are exempted from wearing a mask. So, it becomes all the more important for ophthalmologist.

The disease caused by novel coronavirus (SARS-Severe acute respiratory syndrome) has a high risk of transmission mainly through fomite and aerosols. There is an increased propence of shedding of virus as an aerosol during coughing, crying in case of children, sneezing thereby settling on the surface. Subsequently, it is transmitted from contaminated hands to mouth, nose and eyes [3,4].

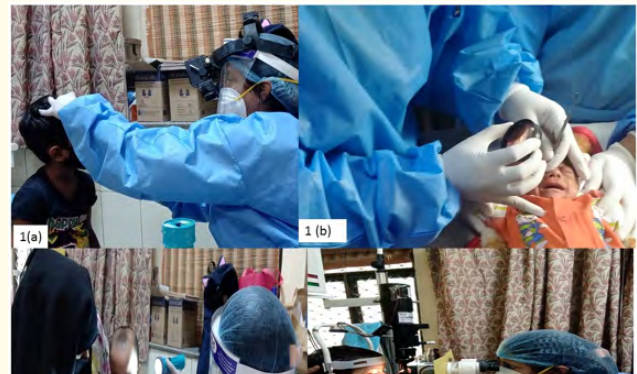


Figure 1: Ophthalmic examination by an ophthalmologist wearing gloves, mask face shield, disposable gown doing. 1a: Indirect ophthalmoscopy in a child. 1b: ROP screening in a preterm baby (aerosol generating is likely as the child is crying). 1c: Torch light examination in a child less than 2 years without mask. 1d: Slit lamp examination in a child with a protective shield in form of X ray film mounted at slit lamp.

SARS COV2 is also detected in the tear secretions by reverse transcriptase PCR reaction in a recent study. Recently a study conducted in china reported the presence of this virus in almost 31.6% of patients with COVID 19 related conjunctivitis tested positive on nasopharyngeal swab [2-4].

Those who have to go close to such babies for doing indirect ophthalmoscopic specially fundus examination in children. The importance of PPE kits becomes important specially in case of conducting ROP screening in NICU where the child is preterm not wearing mask on incubator, eyes can act as a portal of entry through direct aerosol inoculation [5,6].

VUCA-Volatility, uncertainty, complexity and ambiguity of general situations and it fits apt for the world is today is thoroughly affected by COVID 19 pandemic. This can be converted to VUCA-2: Incorporating vision, understanding, courage and adaptability which may help us to reach our previously pending vision targets set by WHO and Universal Eye Care 2025 [7].

Precautions to be taken

Personal protective equipment in the form of gloves, surgical cap, N95 mask/surgical/three play masks must be provided to all the health care workers. should be a security barrier at the entry point so that only the patient and one attendant can enter the hospital. Benzalkonium chloride has an inhibitory effect on various viruses including coronavirus. It is a very effective quaternary ammonium compound with cationic amphiphilic property inhibitory against various bacteria and virus. It is an essential constituent in sanitizers and wipes [6,9].

Incidentally, it is commonly used as a preservative in ophthalmic solutions. It's concentration may vary ranging from 0.01% to 0.04%. It has shown promising results in treatment of adenoviral conjunctivitis even at concentration as low as 0.02%. Hence, use of BAK containing ophthalmic lubricating drops in HCW's can be used as a safe strategy [8].

Betadine eye drop for conjunctivitis has also shown inhibitory effect on viral effect on viral conjunctivitis. Though, it has side effects like burning and irritation but these can be reduced by diluting 1 ml of 5% Betadine with 4 ml of BAK containing lubricating eye drop [8,9].

Danger to ophthalmologist examining children [8,10]

1. Children often wear ill fitting mask with a risk of spreading the infection.
2. Children less than 2 years are allowed to visit hospital without masks.
3. Sometimes it is difficult to convince children to wear masks as a result of which ophthalmologist become prone to infection when the child cries/coughs during the procedure (Figure 1a and 1c).

4. Preterm babies generally don't wear masks so ROP screening is a potential dangerous procedure with the child crying while indentation releasing lots of aerosols so it becomes mandatory for the examining ophthalmologist to wear masks (Figure 1b).
5. Also as reported in various studies that children spread virus for a longer period in nasal secretions and stools as compared to adults. So, it becomes all the more dangerous for the ophthalmologist to wear proper PPE kit while examination.
6. General anesthesia should be avoided if possible.

These guidelines are in consensus with the All India Ophthalmological society (AIOS) guidelines [10]:

Triage:

This can be done at the hospital gate:

1. Thermal scanning of all the patients entering the hospital should be done at the main gate.
2. Only one attendant should be allowed to enter with the patient.
3. Face mask should be made compulsory for the accompanying attendant.

All the patient should be asked about history of fever with dry cough, in case of SARI (Sub acute respiratory tract infection) symptoms they can be referred to the COVID flu corner if available in the hospital. If there is no such facility then patient should be referred to nearby COVID hospital.

In a recent study conducted on impact on patient visit to hospital after opening of lockdown in this pandemic by Das et al it was found that nearly two third of the patients were emergency and one third as routine when classified according to AIOS guidelines as when these patients were triaged, it was found that nearly 6% had visited for allergic conjunctivitis in case of children [11]. So, all these visits could have been postponed if teleophthalmology is promoted amongst the patients attendants. This teleophthalmology is a new revolution in the field of ophthalmology. This can be done through emails, social media, what's app.

The following measures can be taken while teleophthalmology:

- Use clinical photos to assess squint, ask parents to click the photos in bright light.
- Even children with cranial nerve palsies, allergic conjunctivitis can be treated on the basis of photographic telephonic consultation.

The pediatric ophthalmic consultations can be divided in following groups [10]

Emergency- To be seen in OPDs	Teleconsultation
Any acute onset of squint or diplopia	Stable refractive error
Acute ptosis/proptosis	Stable optic neuritis/ disc edema cases
Retinopathy of prematurity screening for preterm babies/ treatment	Stable amblyopia for followup
Post retinal detachment	Stable postoperative cataract cases due for followup 6 months post op
Leukocoria: congenital cataract or retinoblastoma	Cranial nerve cases stable but due for followup
Traumatic head and eye injuries	
Acute red eye/acute dacryocystitis	
Preseptal cellulitis/orbital cellulitis	

Conclusion

So, with all this a new tiered health care system needs to be revived with minimal risk to the health care personal along with safe treatment of patients. One such way to achieve that goal is by procuring teleophthalmology in the routine ophthalmic practice. With all this association and understanding from ophthalmologist and patient point of view a new normal can be incorporated in the field of ophthalmology [12].

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