

CAM:

An overview



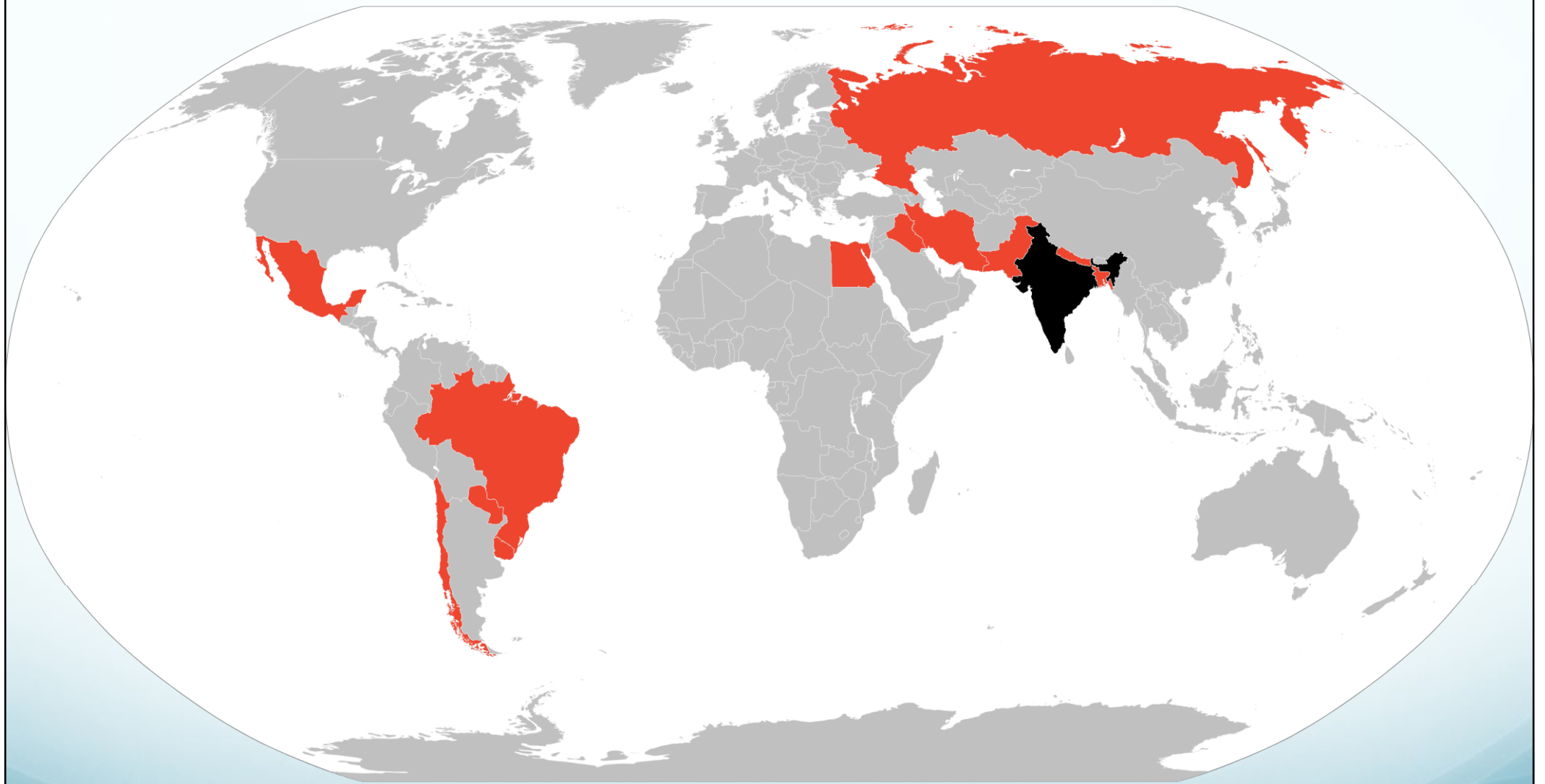
Dr Mohnish Grover
MS ENT (AIIMS, New Delhi)
Former, Senior Resident, PGIMER, Chandigarh
Professor ENT, SMS Medical College, Jaipur
Convener, Mucormycosis Board, SMS Medical College, Jaipur



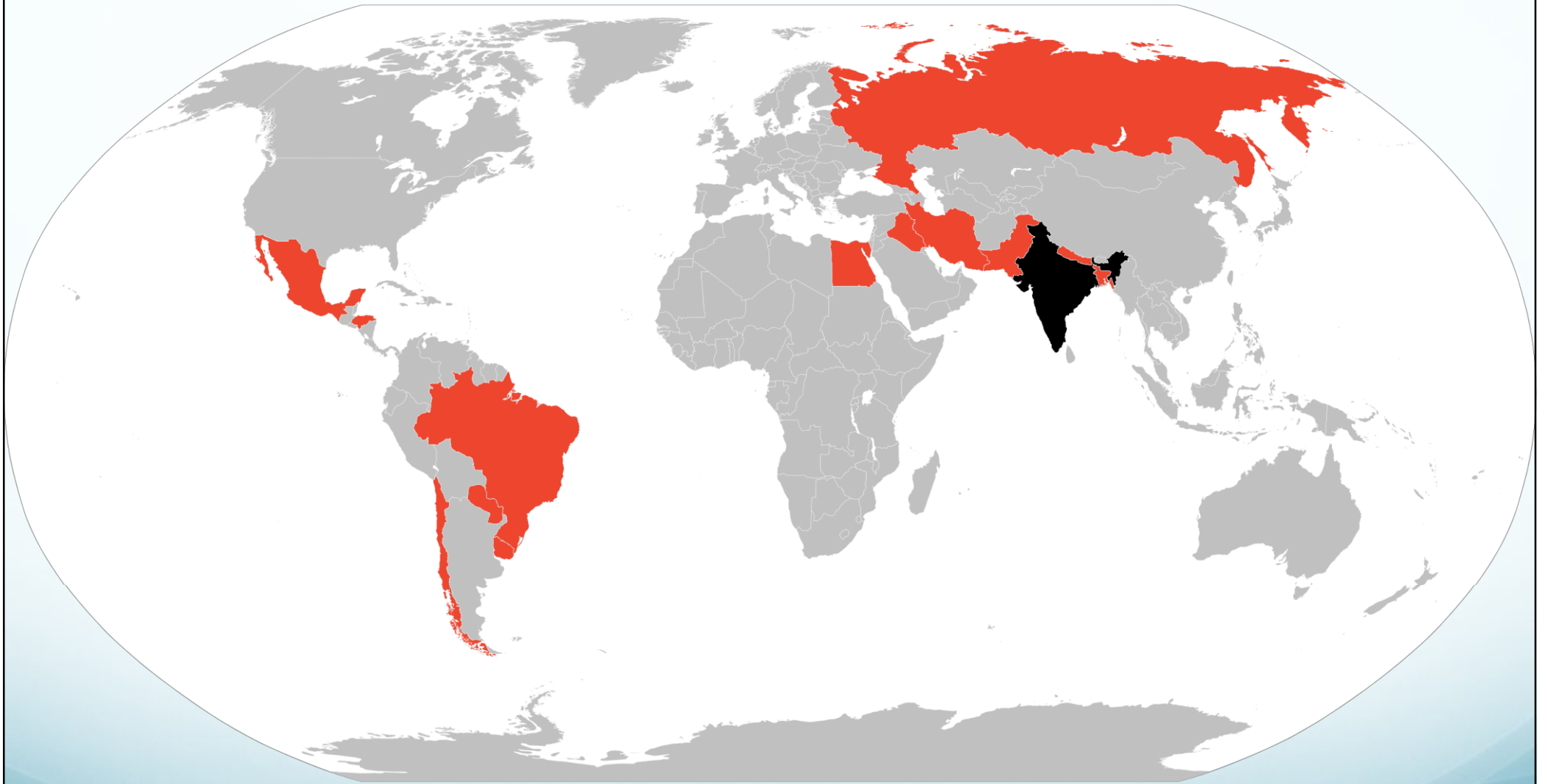
We think we are done with the
pandemic, but the pandemic is
not done with us

A world map showing the distribution of the genus Euphorbia. The distribution is highlighted in red, covering large areas of North America, South America (primarily Brazil), Europe, North Africa, and parts of Asia and Australia. India is highlighted in black. The map uses a light blue background for the oceans and a light gray background for the landmasses not covered by the red distribution area.

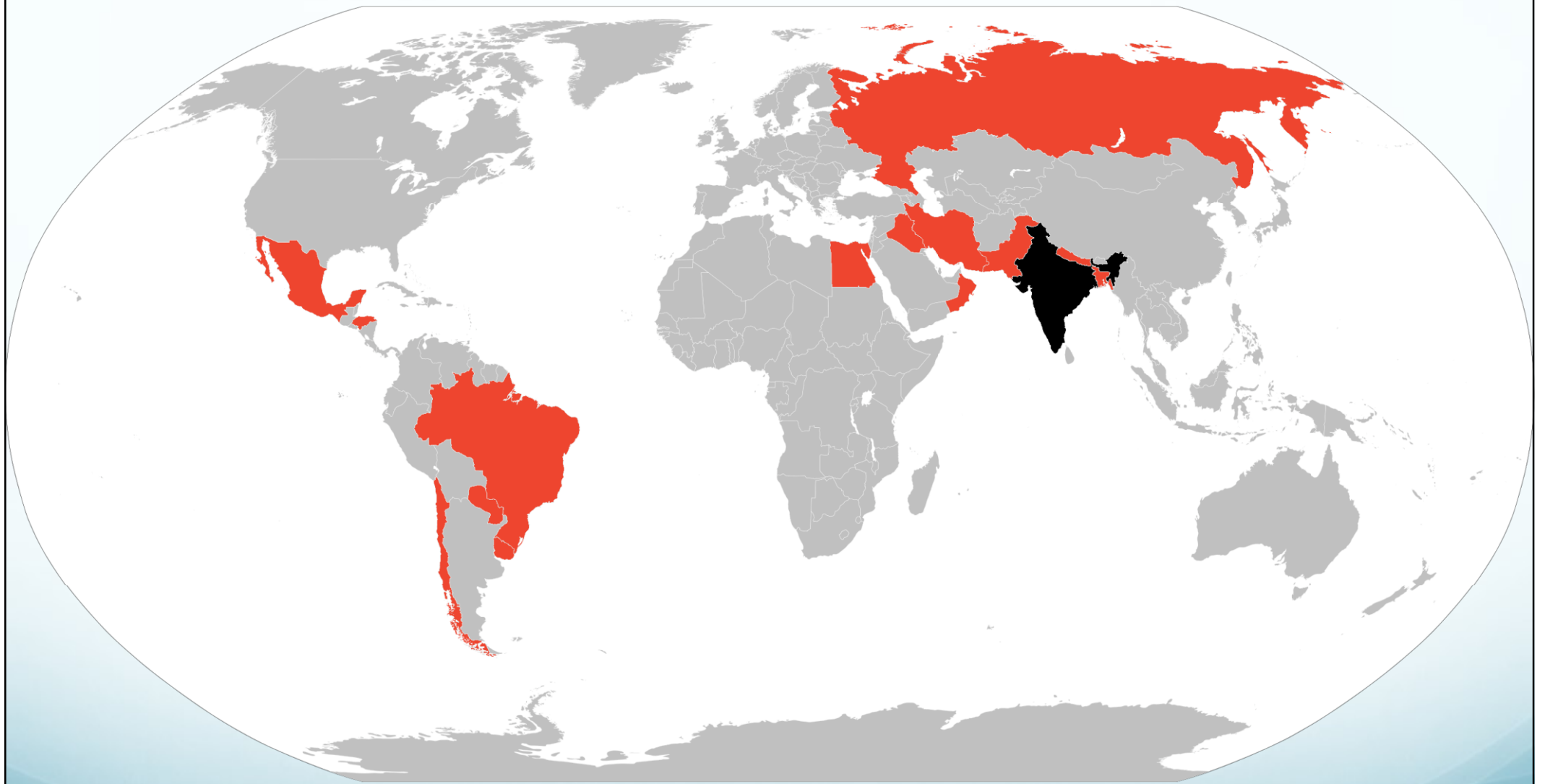
Mucormycosis World Map



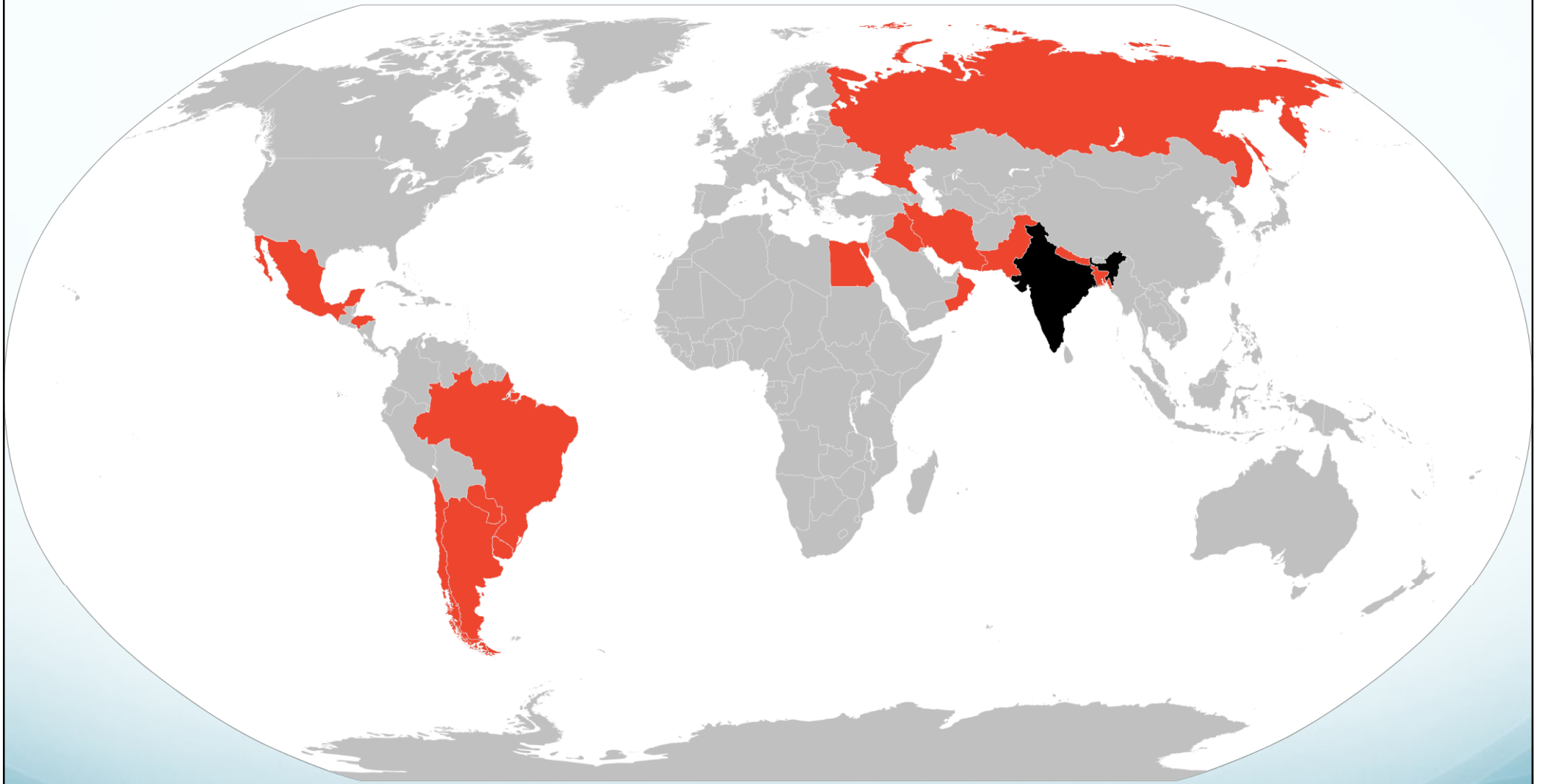
Mucormycosis World Map



Mucormycosis World Map



Mucormycosis World Map



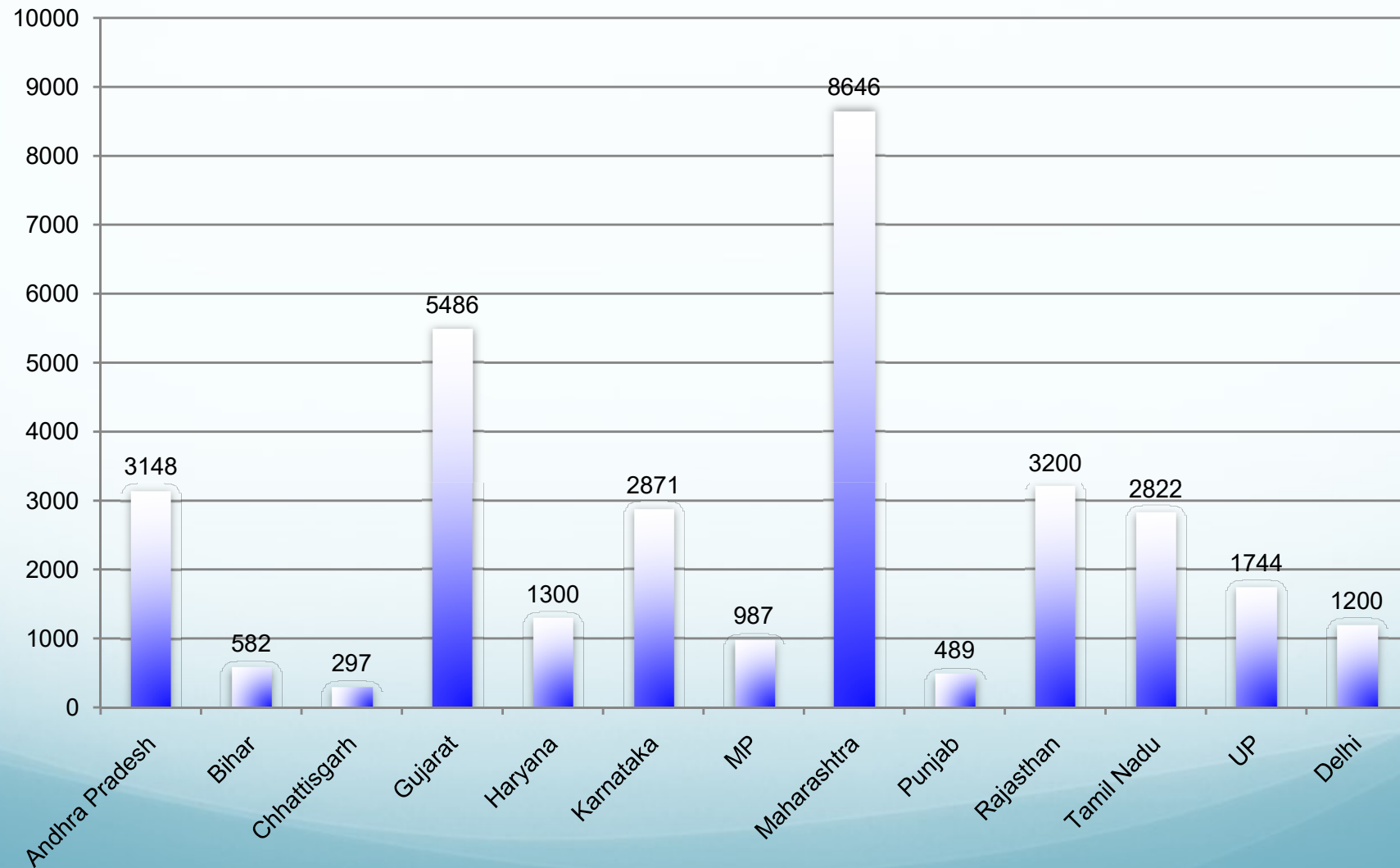
Mucormycosis: World

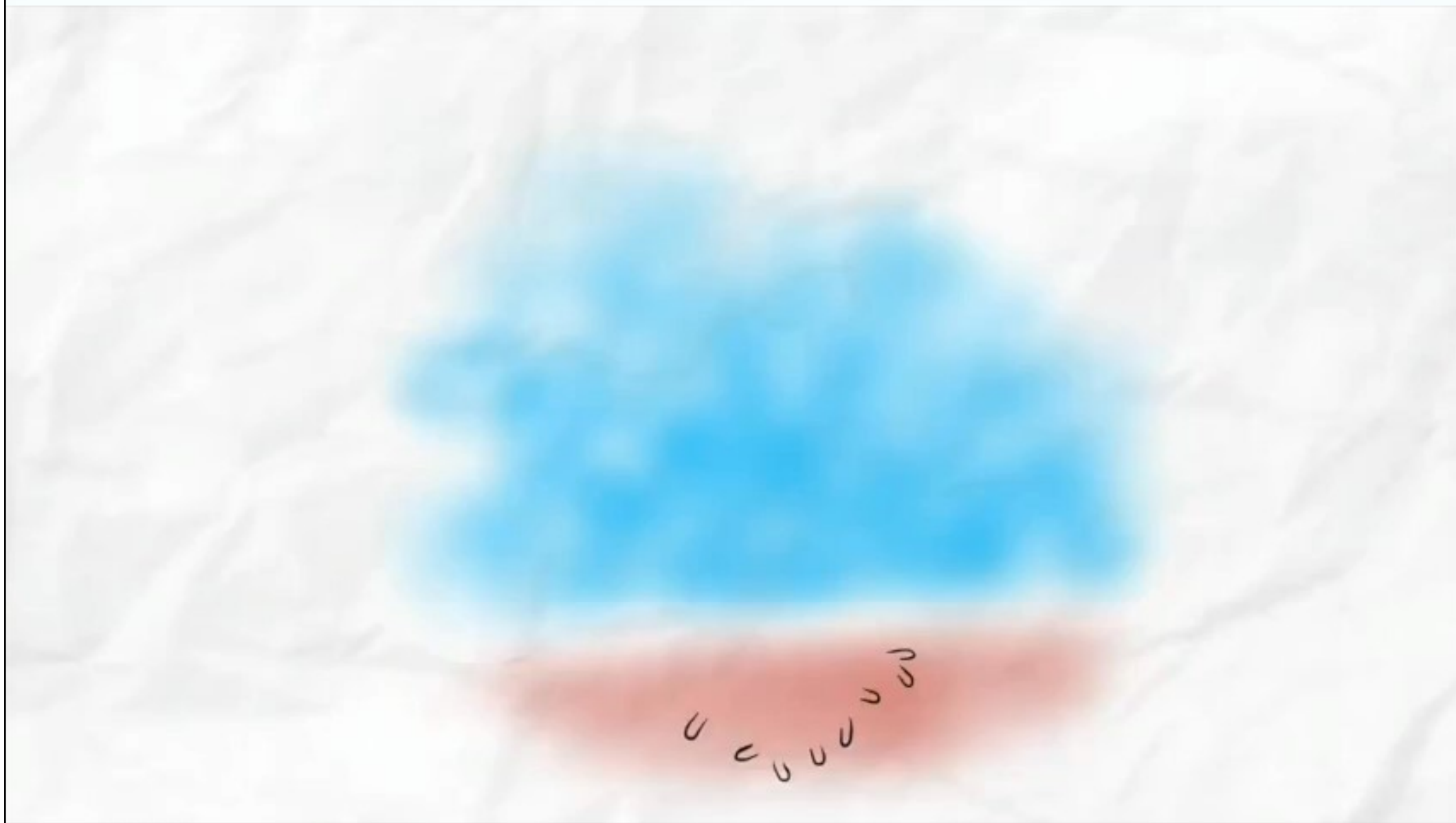
- Total number of cases: 40884
- Total number of deaths: 3138

	Cases	Deaths
India	40845	3129
Nepal	11	2
Brazil	5	1
Iraq	5	2
Mexico	3	1
Bangladesh	3	1
Oman	3	0

Mucormycosis: India

Cases





Is it new?

The Journal of Laryngology & Otology

cambridge.org/jlo

Main Article

Dr S Sharma takes responsibility for the integrity of the content of the paper

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Post coronavirus disease mucormycosis: a deadly addition to the pandemic spectrum

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Abstract

Objective. To study the possible association between invasive fungal sinusitis (mucormycosis) and coronavirus disease.

Methods. A prospective observational study was conducted at a tertiary care centre over four months, involving all patients with mucormycosis of the paranasal sinuses suffering from or having a history of coronavirus disease infection.

Results. Twenty-three patients presented with mucormycosis, all had an association with coronavirus disease 2019. The ethmoids (100 per cent) were the most common sinuses affected. Intra-orbital extension was seen in 43.47 per cent of cases, while intracranial extension was only seen in 8.69 per cent. Diabetes mellitus was present in 21 of 23 cases, and was uncontrolled in 12 cases. All patients had a history of steroid use during their coronavirus treatment.

Conclusion. New manifestations of coronavirus disease 2019 are appearing over time. The association between coronavirus and mucormycosis of the paranasal sinuses must be given serious consideration. Uncontrolled diabetes and over-zealous use of steroids are two main factors aggravating the illness, and both of these must be properly checked.

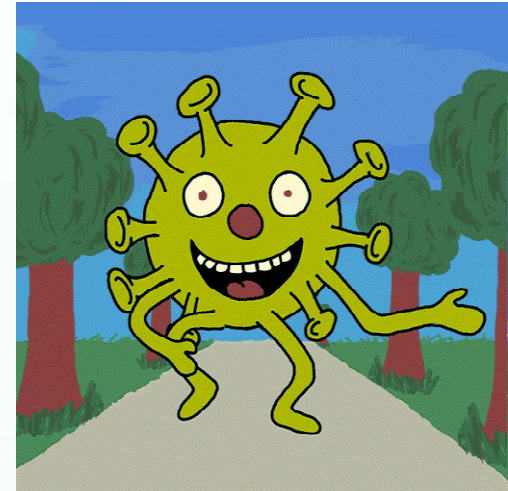
Mucormycosis

- Angioinvasive fungus which invades immunocompromised patients
- Various types:
 - Rhino-orbital-cerebral
 - Pulmonary
 - Gastrointestinal
 - Cutaneous
 - Disseminated
- Mortality: 50%



Why the increase??

- Covid 19
 - Increased sugar levels
 - Inflammatory cytokine surge
 - Increased ferritin levels
 - Lymphopenia
 - Prothrombotic state
 - Broad spectrum antibiotics
 - Tocilizumab
- DM
- Steroids
- Oxygen humidifiers?
- Industrial oxygen??




MUCORMYCOSIS BOARD

Sr. No.	Name	
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2.	Dr. Meenu Baghartta, Prof. Radiology	Member
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Mucormycosis board will work under mentorship of HOD ENT as ENT department is primary department for Mucormycosis & mentor will ensure complete patient handling protocol like OPD, IPD, Investigation, implementation of Surgical, Medical, Day care treatment, collection of data & reporting since Mucormycosis is notified disease.

This order come in force with immediately effect.


(Dr. Sudhir Bhandari)
Principal & Controller

Post Covid Mucormycosis Guidelines

Mucormycosis Board, SMS Medical College, Jaipur

What is mucormycosis?

Mucormycosis is a fast spreading angioinvasive fungal infection seen in immunocompromised individuals. It can involve various body parts and rhino-orbital-cerebral mucormycosis is the most common form. Its incidence has risen in the wake of ongoing Covid 19 pandemic and uncontrolled blood sugar levels during disease. It is a fast spreading disease, which starts from nose and sinuses and spreads to eyes and brain in a matter of few days to weeks.

How to prevent?

Judicious use of steroids for Covid 19 treatment (use for limited dose and time and in specific situation like cytokine storm etc) wi

Monitoring and control of blood glucose levels

Using clean water in oxygen humidifiers and the water needs to be regularly changed

Saline gargles

Alkaline nasal douching

Fungal spores are ubiquitous so high risk patients should be asked to wear masks

Regular patient education about early symptoms, so that mucormycosis can be detected in early phase itself.

When to suspect?

History of Covid 19

Diabetes mellitus/uncontrolled sugar values

History of steroid usage

Signs and symptoms:

Nasal stuffiness

Foul smelling nasal discharge

Dental pain

Pain/numbness/swelling over maxillary area

Black/necrotic lesions/crusts over palate, face or nasal cavity

Ptosis

Pain in the eyes

Lid/periocular edema

Proptosis

Limitation of eye movements

Vision loss,

Facial paresis

Headache

Altered sensorium

Focal seizures

Approach to diagnosis

Microbiological tests

Two Deep or endoscopy guided nasal swabs or scrapings of crusts or nasal mucosal biopsy in saline

Direct microscopy and fungal culture to be done.

Post Covid Mucormycosis Guidelines

Mucormycosis Board, SMS Medical College, Jaipur

Radiological tests

Investigation of choice-

1. CEMRI covering PNS and ORBIT with screening of brain \pm NCCT PNS and orbit with base of skull if suspecting bony involvement.
2. CECT covering PNS and ORBIT with brain if MRI not available / feasible

Protocol for MRI in COVID related rhino-orbito-cerebral mucormycosis

T1W and T2W axial with and without fat suppression covering orbit, PNS and base of skull.

Coronal and sagittal T2W fat suppressed images.

Screening of brain with FLAIR and DWI.

Post contrast - T1W images with and without fat suppression in axial plane and T1W fat suppressed in coronal and sagittal planes.

Protocol for CT in COVID related rhino-orbito-cerebral mucormycosis

Pre and post contrast (if needed) axial and coronal sections (3mm thickness).

How to treat?

Early diagnosis and treatment by multidisciplinary team is key to success. However, even with adequate treatment the mortality rate is very high.

Medical treatment

Standard care:

Treat co-morbidities

Oral/nasal hygiene(Wash/gargles)

Control blood glucose levels (target glycemic range 140- 180mg/dL)

Input/output charting

Antifungals:

Liposomal amphotericin B 5-10mg/kg/day up to total 2-3 gm.

Preload with (500-1000ml) iv fluids to minimize renal toxicity

Regular monitoring of Renal function tests and serum magnesium levels.

If liposomal amphotericin is not available:

Conventional amphotericin or amphotericin B deoxycholate:

1mg/kg/day

Amphotericin B lipid complex: 5mg/kg/day

Amphotericin B colloidal dispersion: 3-5 mg/kg/day

Duration of therapy:

Precise duration cannot be ascertained. In general 2-3 weeks of amphotericin B is required, however it may need to be increased depending on clinical profile of the patient.

If immune defect is resolved – eg diabetes is controlled, neutropenia definitively resolved –therapy can be tapered or stopped after resolution

Post Covid Mucormycosis Guidelines

Mucormycosis Board, SMS Medical College, Jaipur

of signs and symptoms of infection and substantial radiological improvement.

As a step down therapy Tab poscanazole 300 mg BD on 1st day and then followed by 300 mg OD for up to 3 weeks

Surgical treatment

Early debridement of all the necrotic tissue by team of expert ENT and ophthalmologists to decrease the load of fungus and facilitate medical treatment.

Endoscopic /external approach depending on extension of disease and surgical expertise.

Important to remove as much of necrotic tissues as can be removed safely. Involved tissues bleed less, therefore debridement should be continued on basis of radiology and until normal well perfused bleeding tissue is encountered.

Orbital exentration may be required in cases of gross involvement.

Repeated debridement may be needed.

Follow up can be done on basis of clinical symptoms/endoscopy/radiology as per patient profile.

KEY MESSAGE:

High degree of suspicion is necessary.

Patients with Covid 19, diabetes mellitus and steroid use in treatment of Covid are at high risk

Prevention is the best cure

Don't delay treatment for lack of confirmatory diagnosis.

Triple pronged treatment: control sugar levels, antifungals and surgical debridement.

Clinical features







Facial palsy



Cheek abscess



Primary cutaneous mucormycosis



Pics courtesy: Dr Gaurav Gupta

Secondary cutaneous mucormycosis

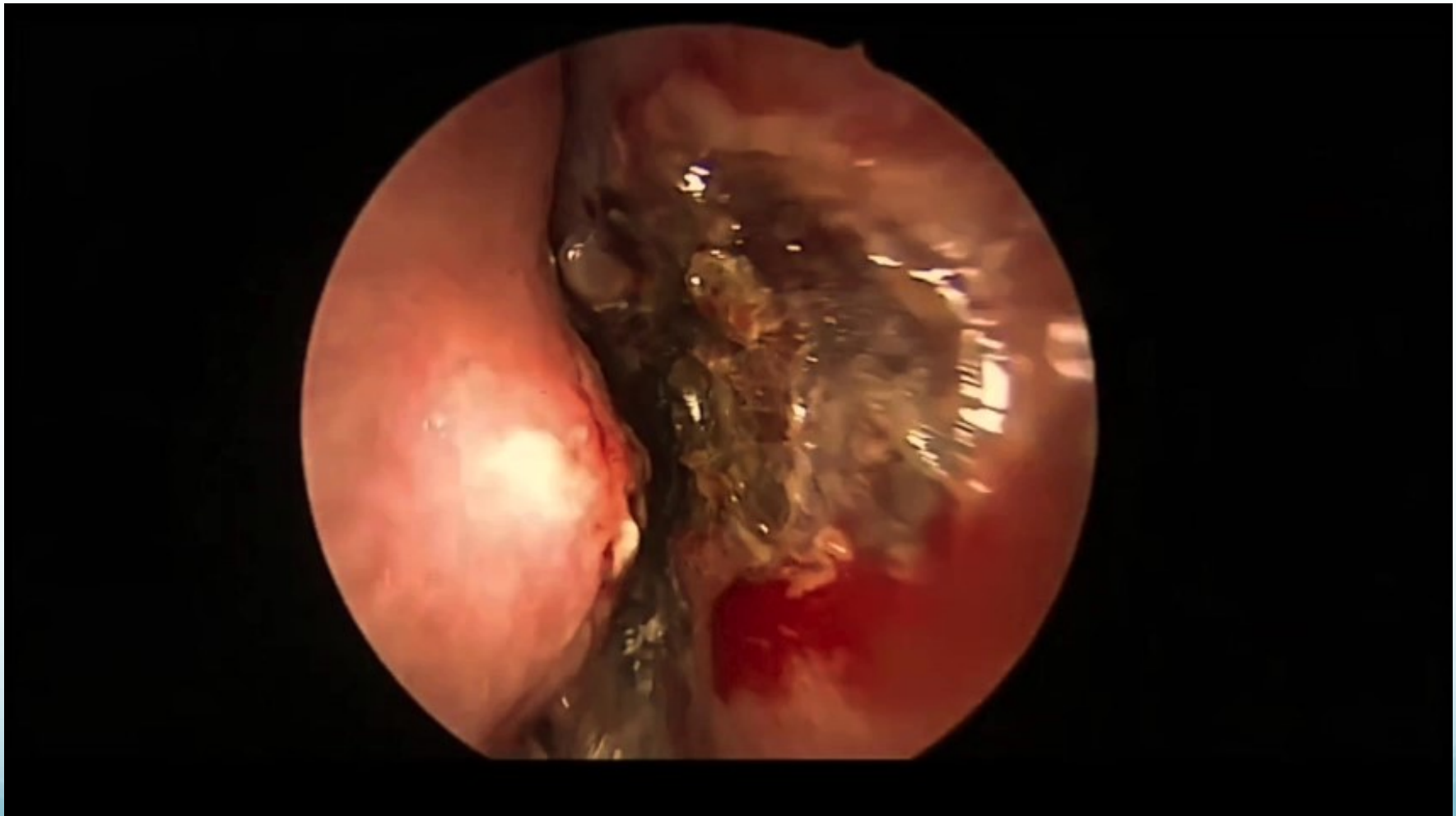


Pics courtesy: Dr Gaurav Gupta

Normal nose

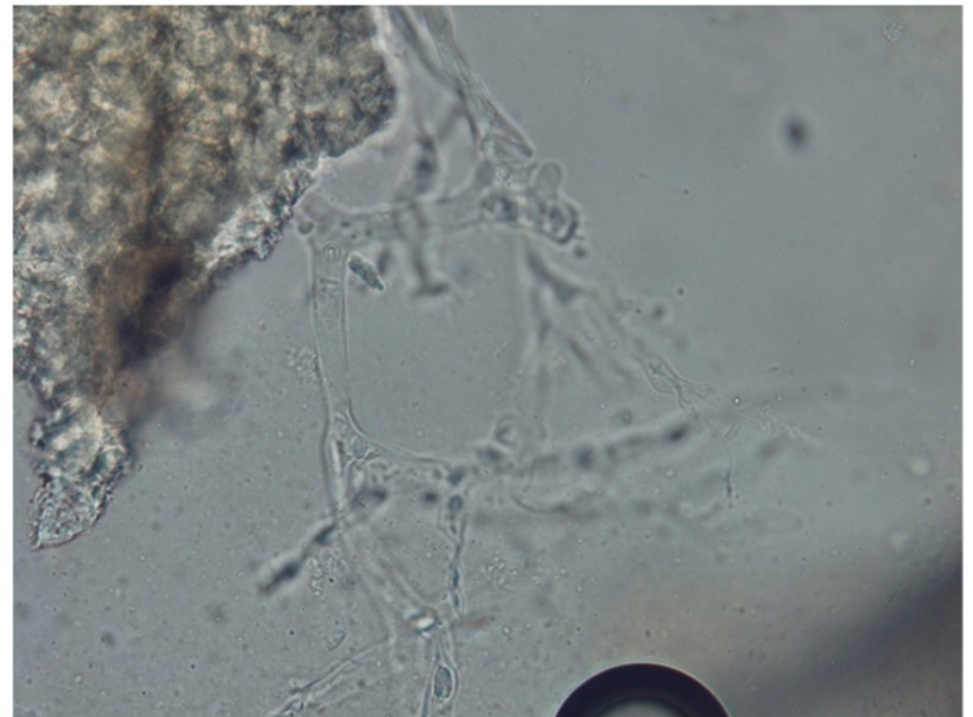


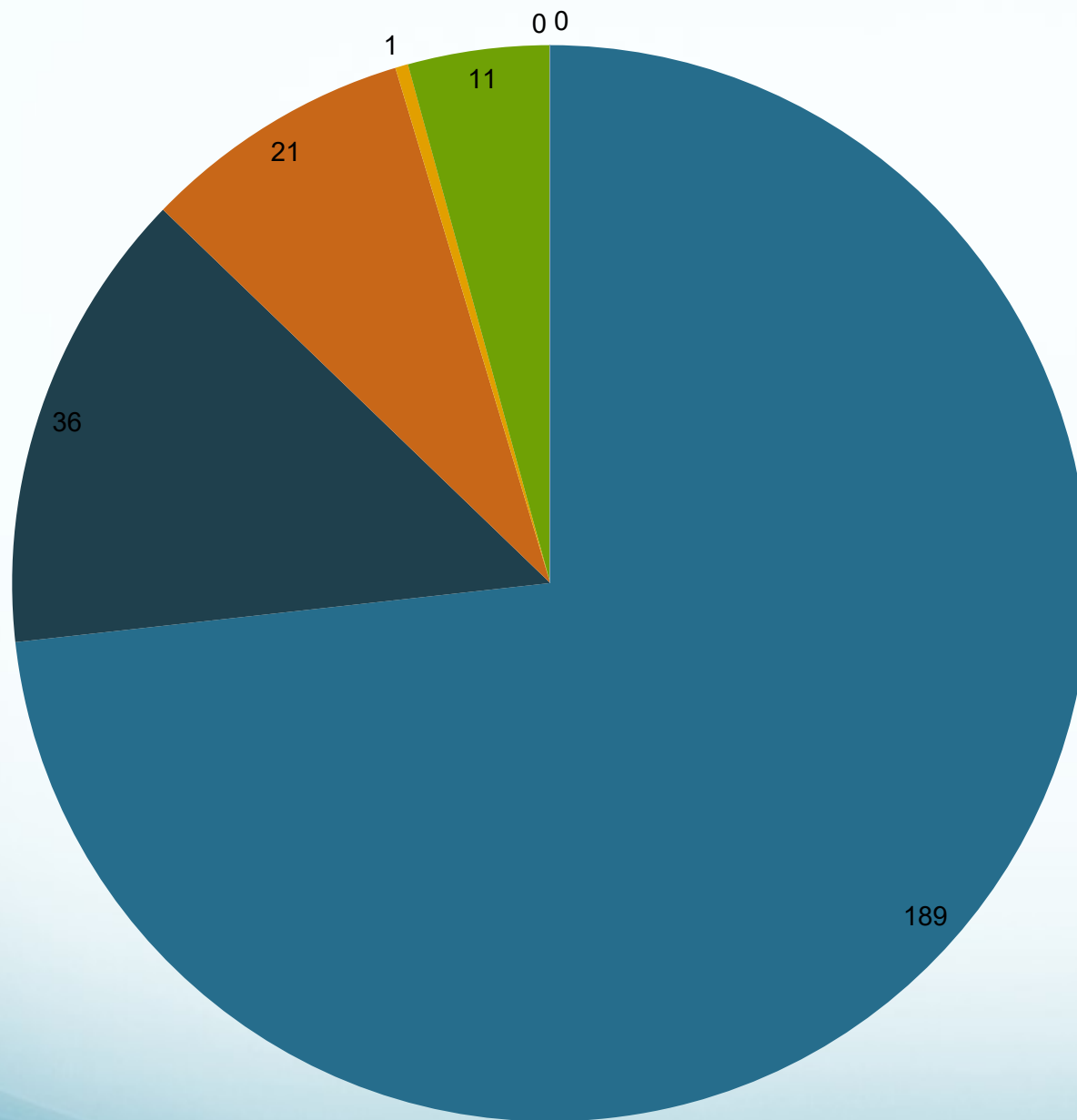
Nose with mucor



ROC Mucormycosis

- Early diagnosis is the key
 - Symptomatology
 - Investigations
 - Microbiology
 - Radiology



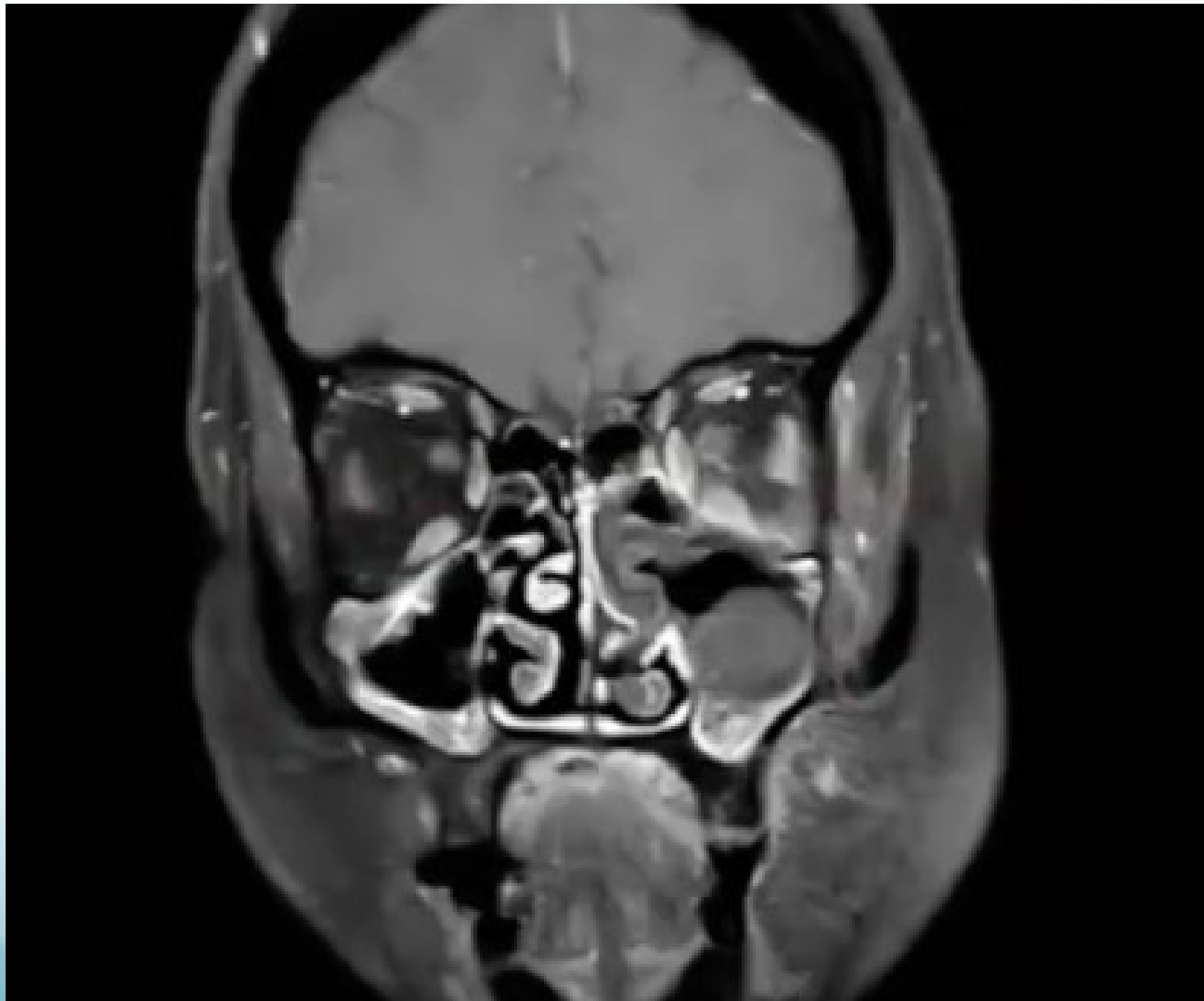


- Mucorales (73.26%)
- Aspergillus spp. (13.95%)
- Candida Spp. (8.13%)
- Alternaria Spp. (0.39%)
- Mixed fungal growth (4.26%)

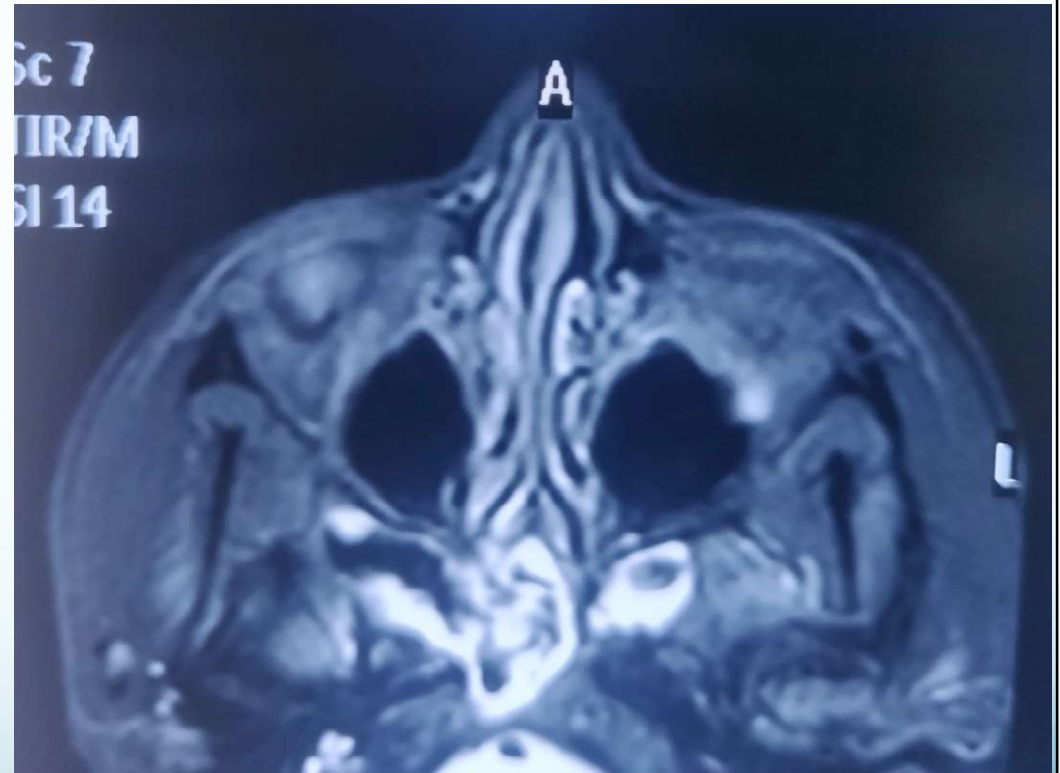
ROC Mucormycosis

- Radiology:
 - Contrast Enhanced MRI T1 and T2 with and without fat suppression
 - NCCT PNS (axial and coronal)
 - CECT PNS: if CEMRI is not feasible

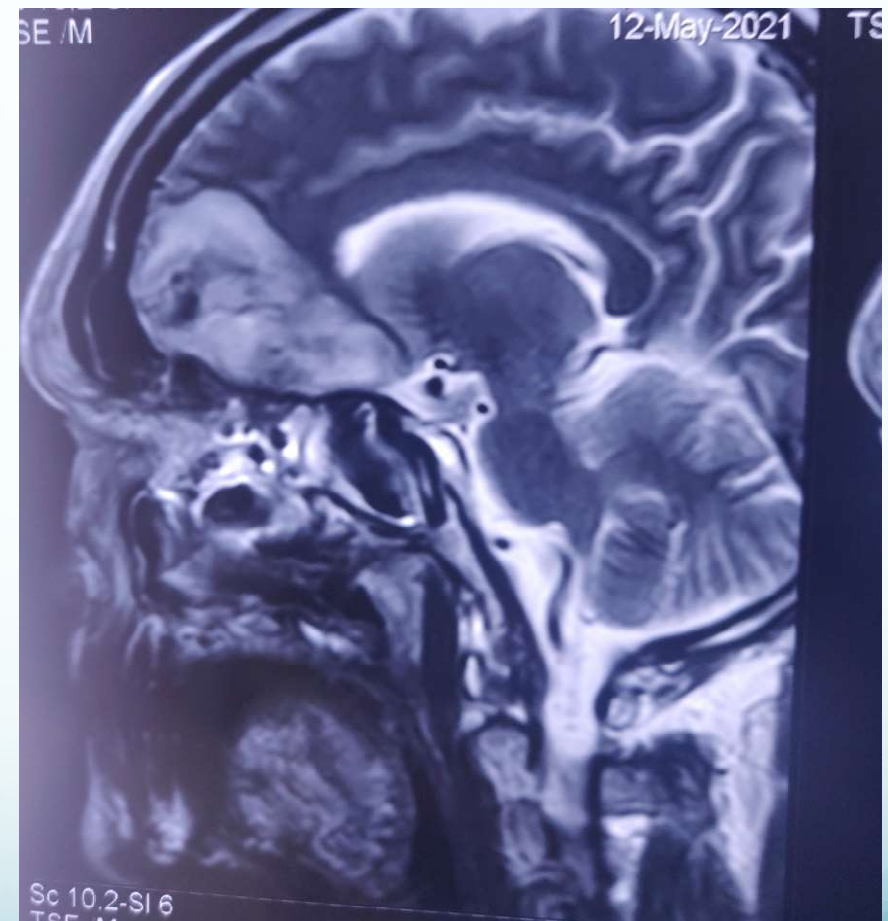
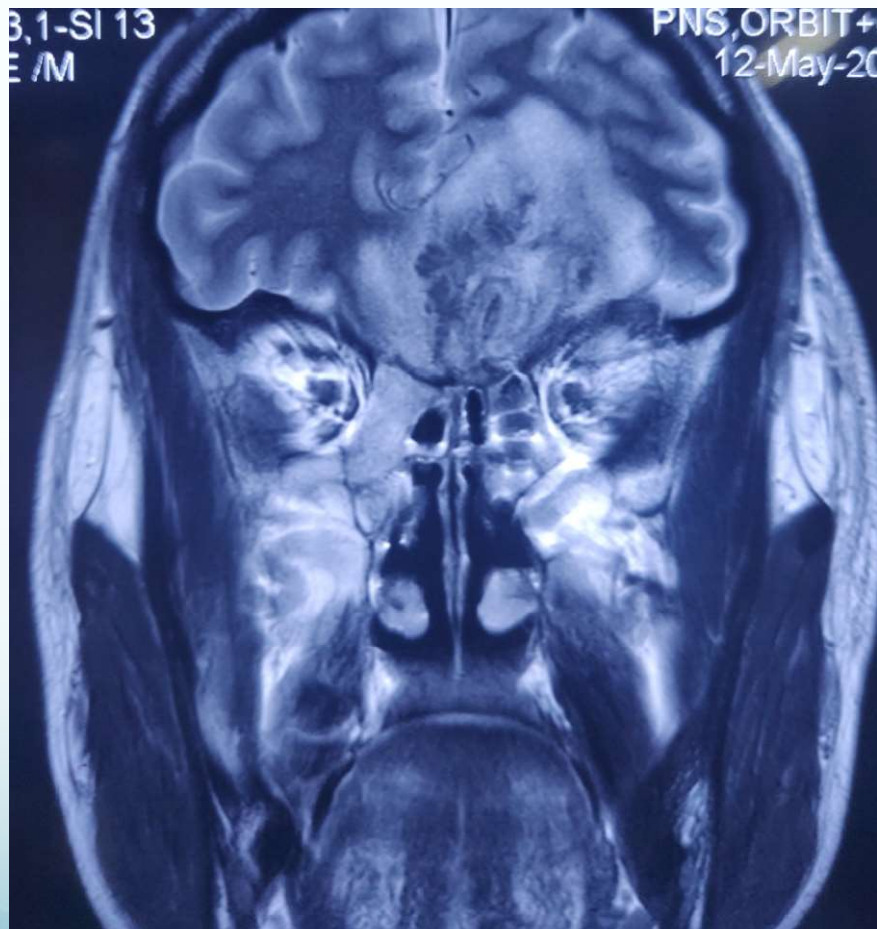
Radiology



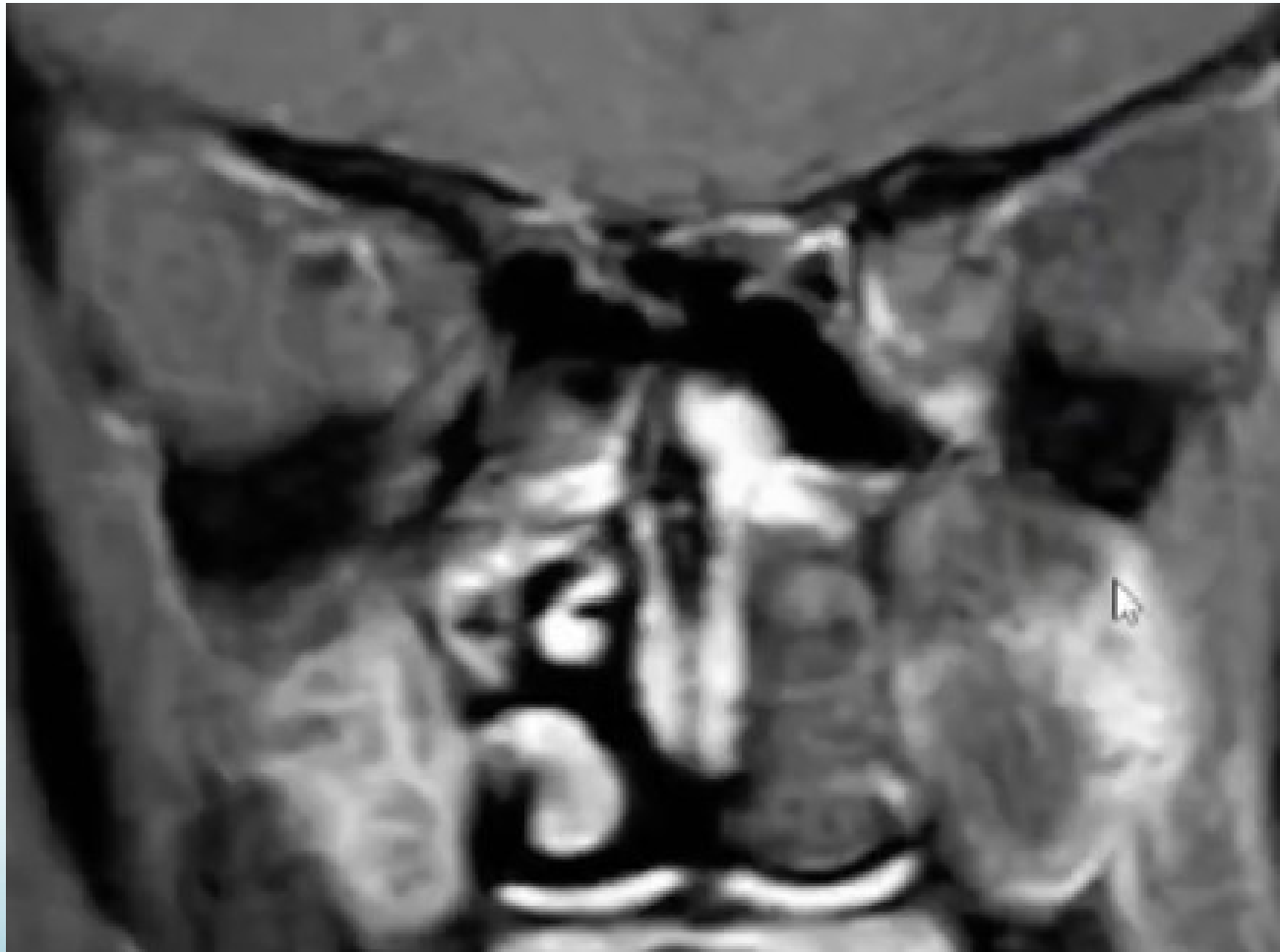
Radiology



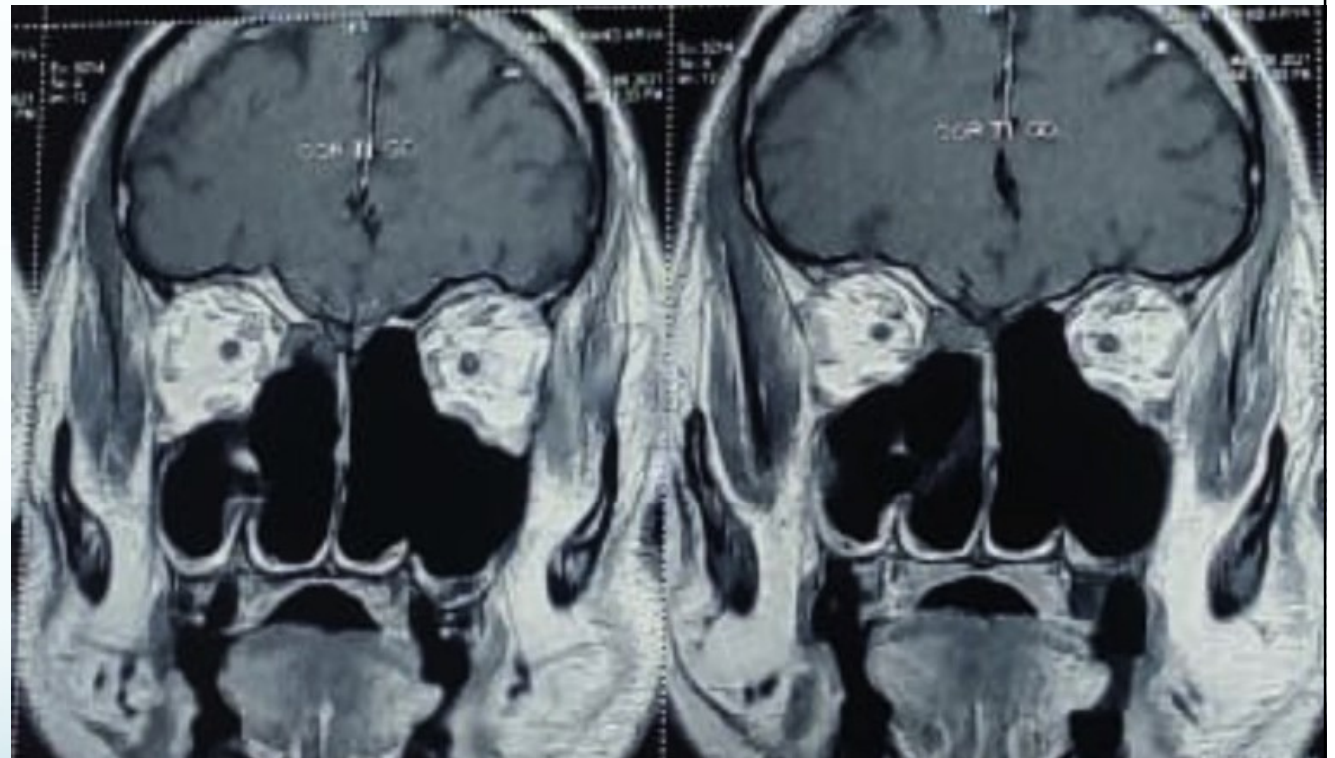
Radiology



Radiology



Radiology



ROC Mucormycosis

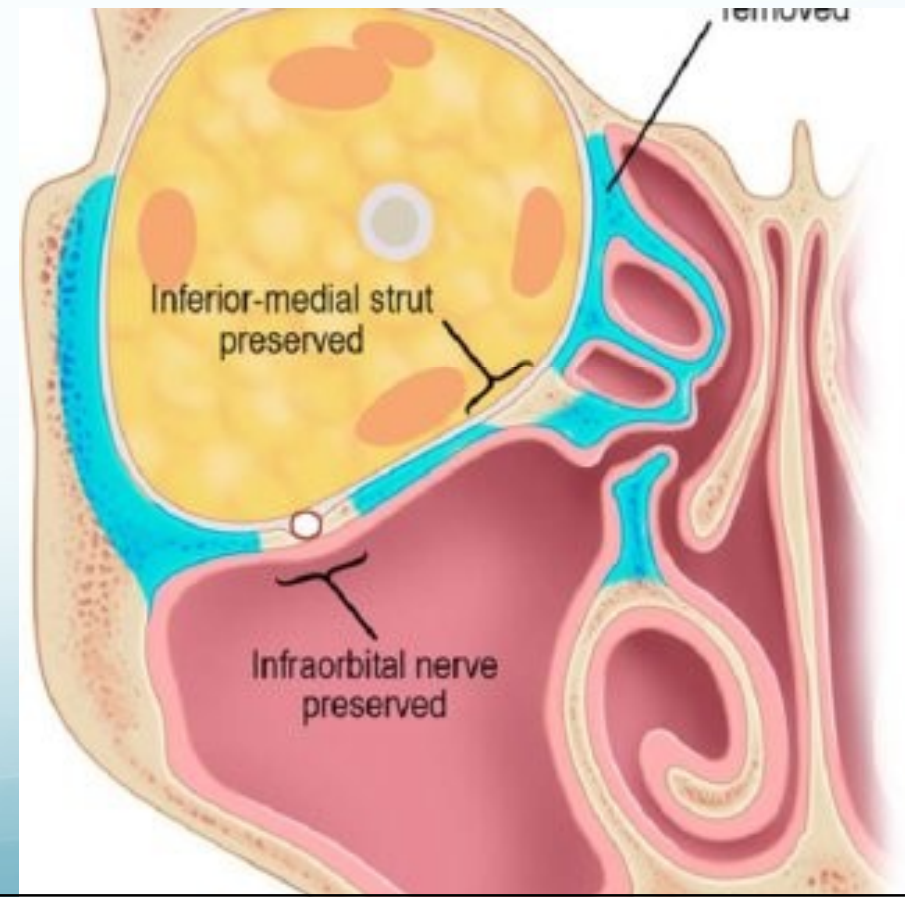
- Treatment:
 - Medical:
 - Strict glycemc control
 - Antifungals:
 - Amphotericin B
 - Posaconazole
 - Isuvaconazole
 - Surgery

Surgery

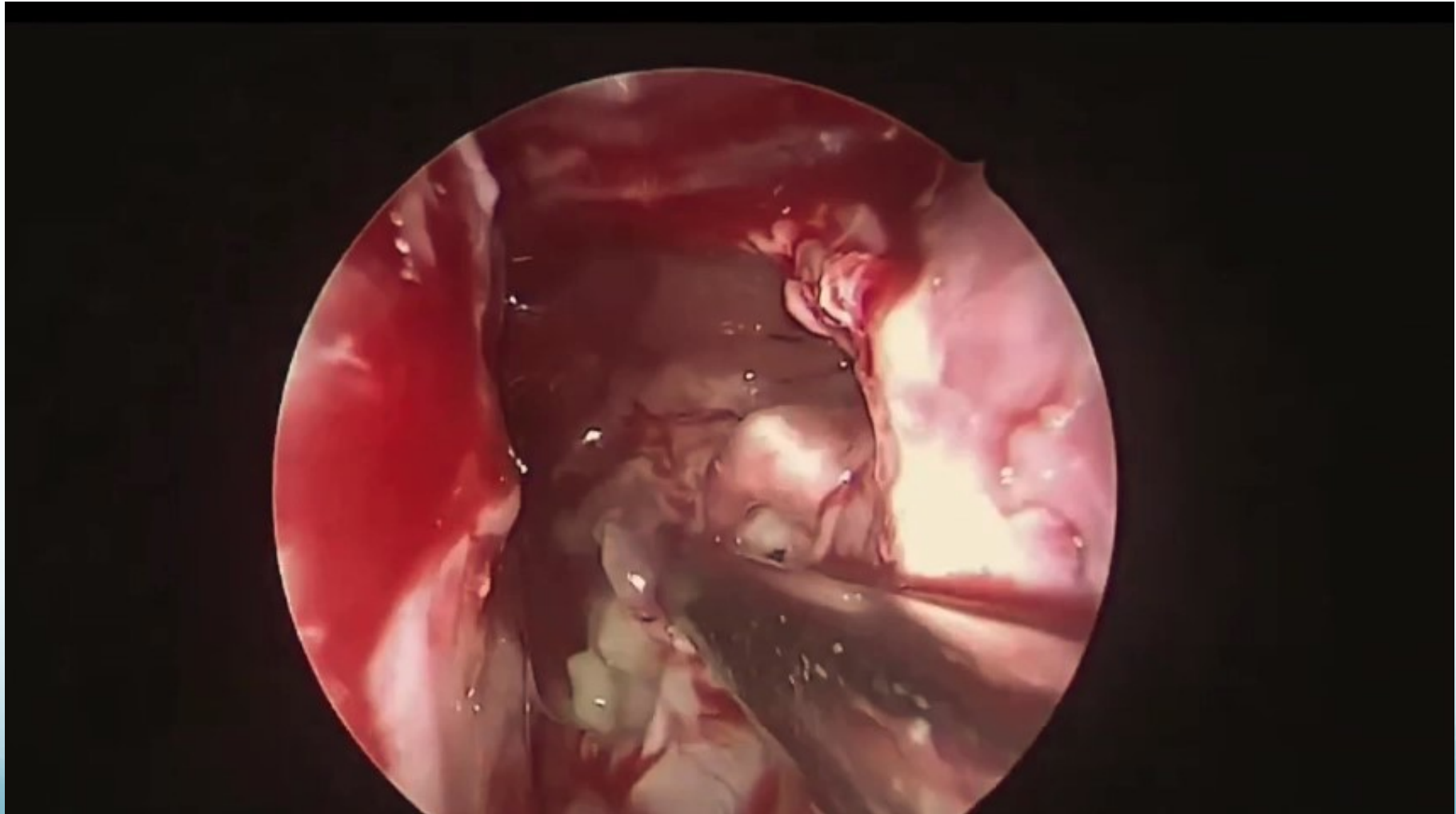
- To facilitate medical treatment
- Removal of necrotic tissue
- Debulking/debridement
- Histopathology and KOH staining

Types of surgeries

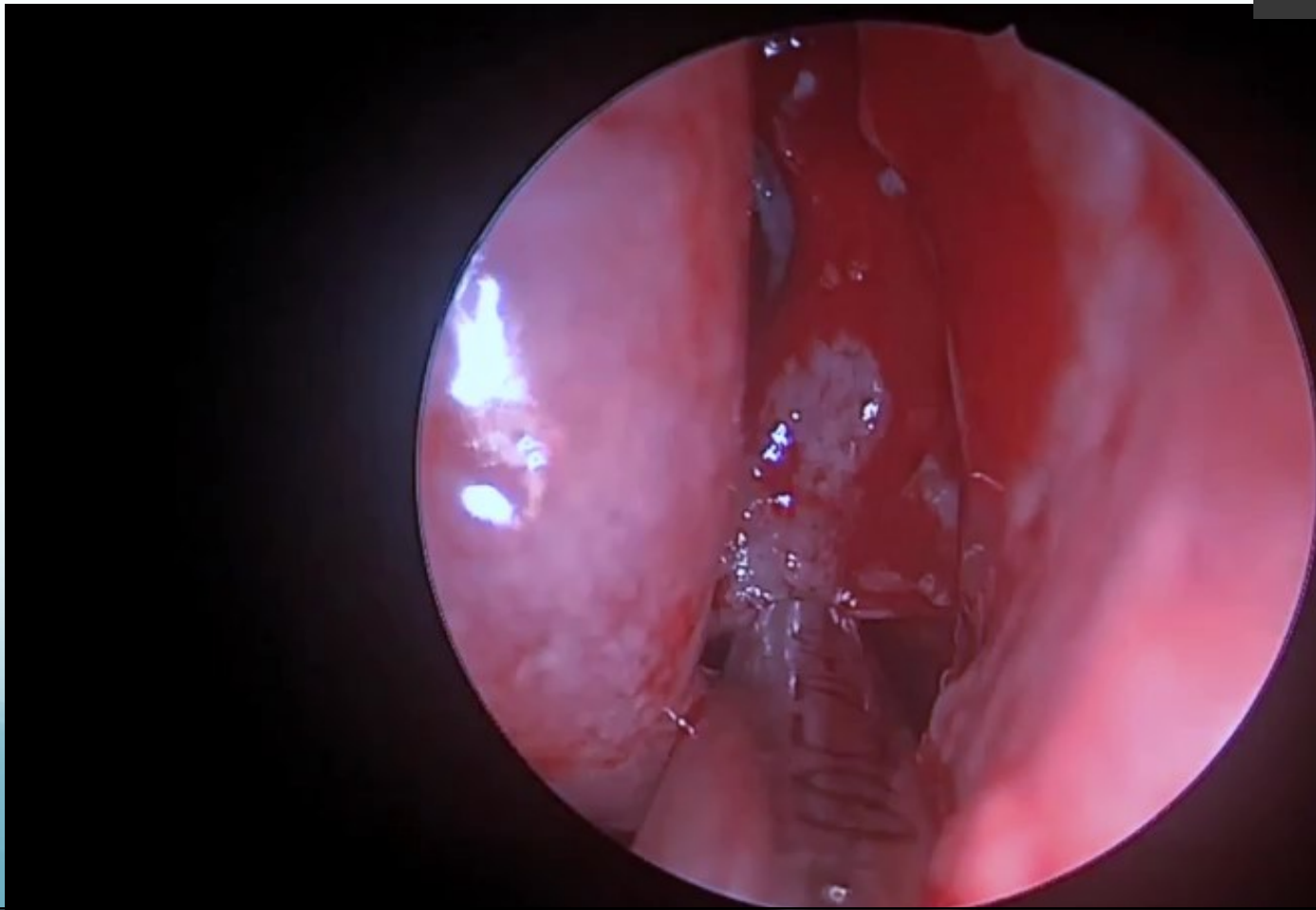
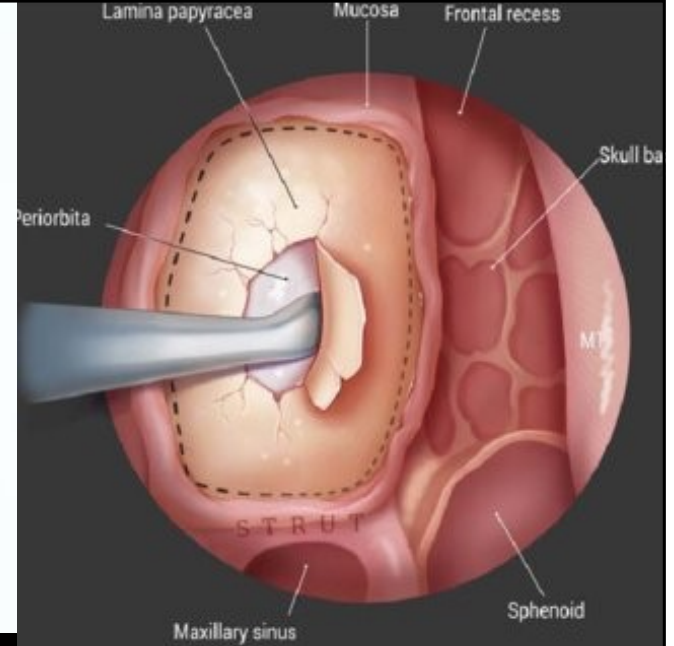
- Endoscopic:
 - Endoscopic sinus surgery
 - Endoscopic orbital decompression
- External:
 - Maxillectomy:
 - partial,
 - total,
 - radical
 - Orbital exenteration



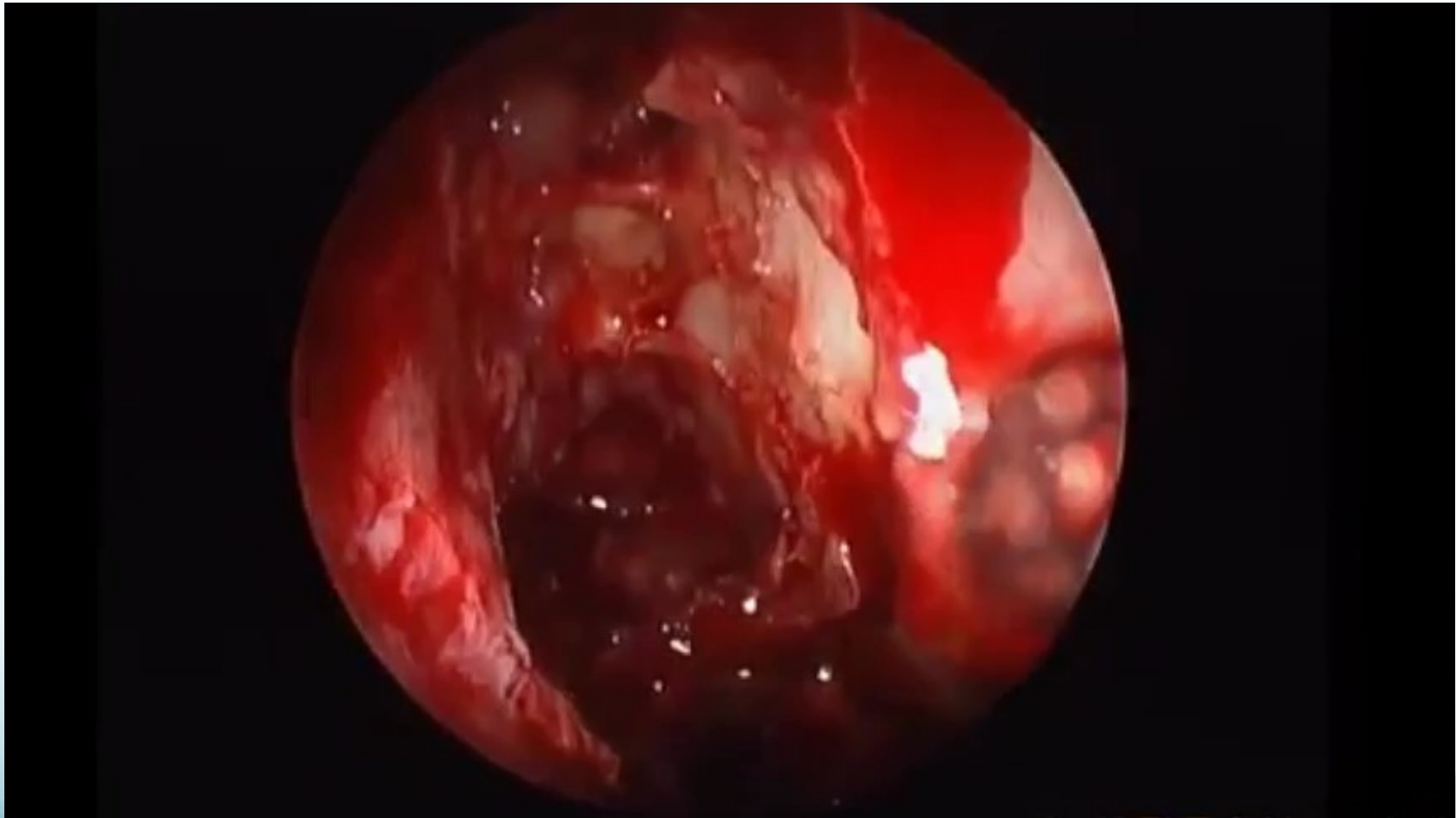
Debridement of necrotic tissue



Endoscopic orbital decompression



Postoperative healing



Black fungus declared epidemic as Rajasthan needs complete data of patients: Gehlot

Mucormycosis or black fungus is a notifiable disease in the state under the Rajasthan Pandemic Act.



Published: 20th May 2021 10:33 PM | Last Updated: 20th May 2021 10:33 PM



A+

A

A-



JAIPUR NEWS

'Free treatment for black fungus across all districts': Rajasthan CM

After notifying Mucormycosis (black fungus) as an epidemic, the Rajasthan government on Thursday announced free treatment for the disease in the state



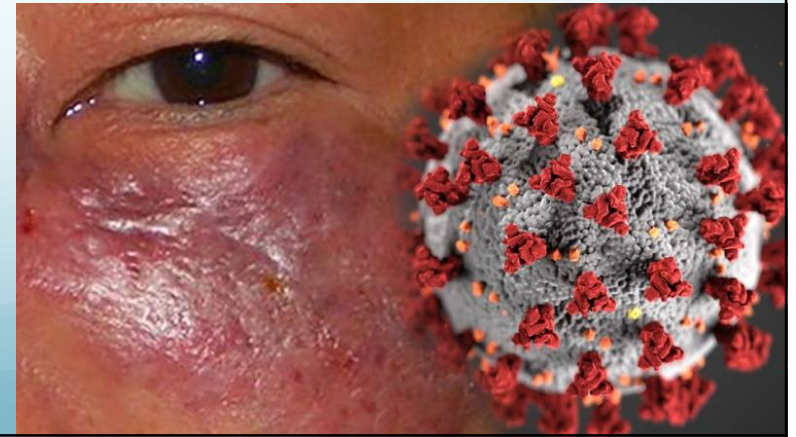
By HT Correspondent

UPDATED ON MAY 20, 2021 10:11 PM IST



Infrastructure: OPD

- Dedicated Mucormycosis OPD
- Ground Floor, Charak Bhawan
- Manned by doctors from ENT, Ophthalmology and Medicine Department
- 8 AM to 8 PM



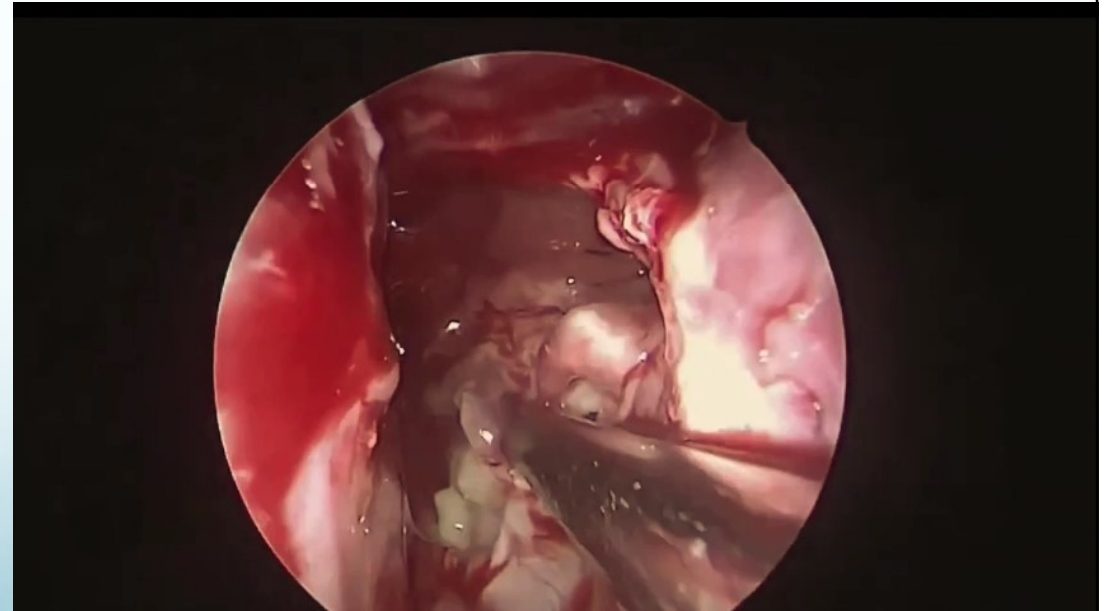
Infrastructure: Wards

- ENT Wards: Male and Female
- Ophthalmology Wards: Male and Female
- Skin Wards: Male and Female
- Radiotherapy Day Care Ward: Male and Female
- Radiotherapy Wards: Male and Female
- 2DE Ward
- Plastic Surgery Ward: Male and Female
- Gastroenterology Ward: Male and Female
- CT Wards: Male and Female

Total beds = 406

Infrastructure: OTs and ICUs

- 3 OT tables in ENT OT running almost 24 x7
- Surgical ICU (9 beds)



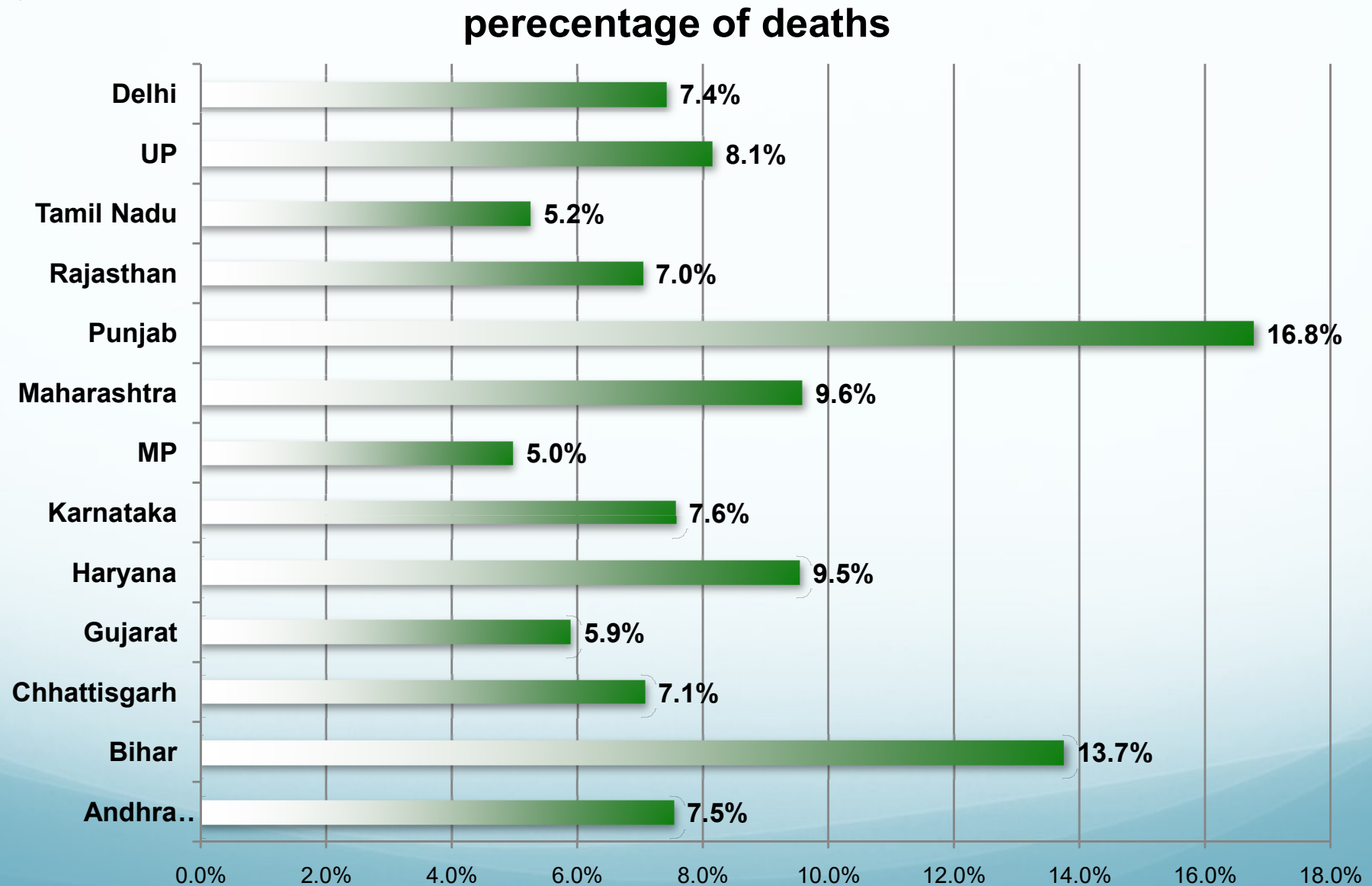
IEC activities

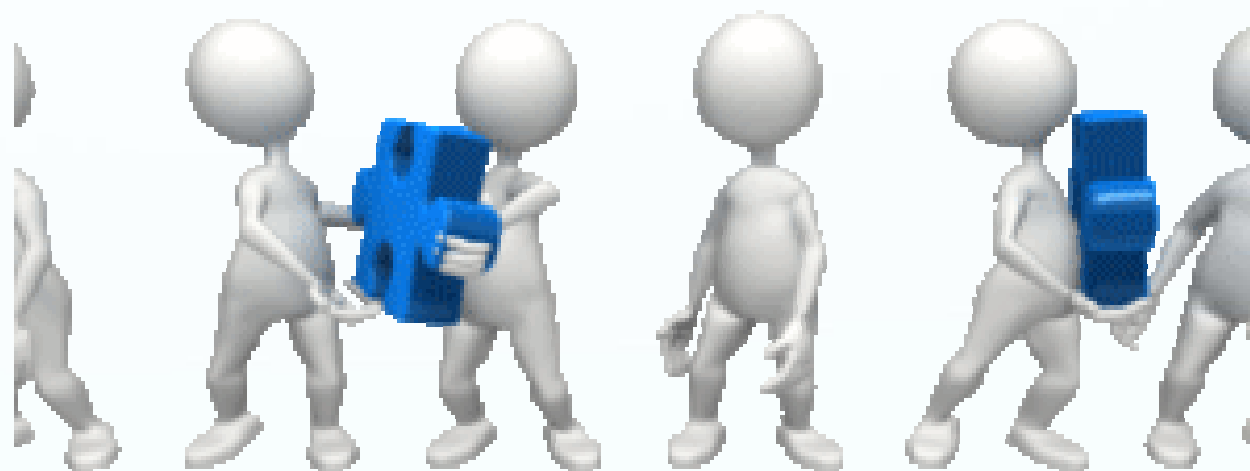
- Advanced training of all approved hospitals for uniform protocols of treatment of mucormycosis
- Basic training of 470 Doctors across the state (NHM)
- Government of Rajasthan has shared the guidelines prepared by SMS Medical College Mucormycosis Board in entire state for proper diagnosis and treatment



What lies ahead: Mortality rates?

Mortality Rate in India: 7.67%







Fungi are the interface organisms
between life and death.

— Paul Stamets —

Thank You

AZ QUOTES