

POST DENGUE MULTIPLE BRAIN LESIONS

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History

17/M HN, Student, Vadodara ,no comorbidities- C/O

High grade fever, bodyache ,vomiting-11/9/2022

Difficulty in breathing, abdominal pain -14/9/2022

Admitted at other hospital

Diagnosed as Dengue Fever- dengue NS1 –positive on 14/9/22

On admission in the hospital,

No fever

Pulse-114/min

BP-90/60 mm Hg

RR-32/min

Spo2-90% on RA

Admitted in ICU, fluid resuscitated, O2 started

Diagnosis-DENGUE SHOCK SYNDROME

Course at previous hospital

- Patient condition deteriorated-Hypotension, hypoxia, sensorium drowsy, decreased urine output

16/9/22

- ABGA s/o Metabolic acidosis
 - SGPT-6040 SGOT-12993 INR-2.71
 - S.ammonia-245
 - S.creatinine-3.26 mg/dl
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- Put on ventilator and inotropic support, SLED done on 17/9/22

- Fever spikes on & off
- Altered sensorium inspite of stopping sedatives
- MRI Brain done(21/9/22)- Hyper intense lesion with Micro-hemorrhages in left frontal and right parietal lobe - ? s/o changes of Dengue Hemorrhagic encephalitis
- Steroids given –Dexona 8mg BD (? duration)
- Fever spikes continued
- ID reference at Baroda(22/9/22)- Blood cultures, s.B D Glucan, s. galactomannan sent, CSF examination advised
- 23/9/22-left eye swelling- MRI brain ,orbit done

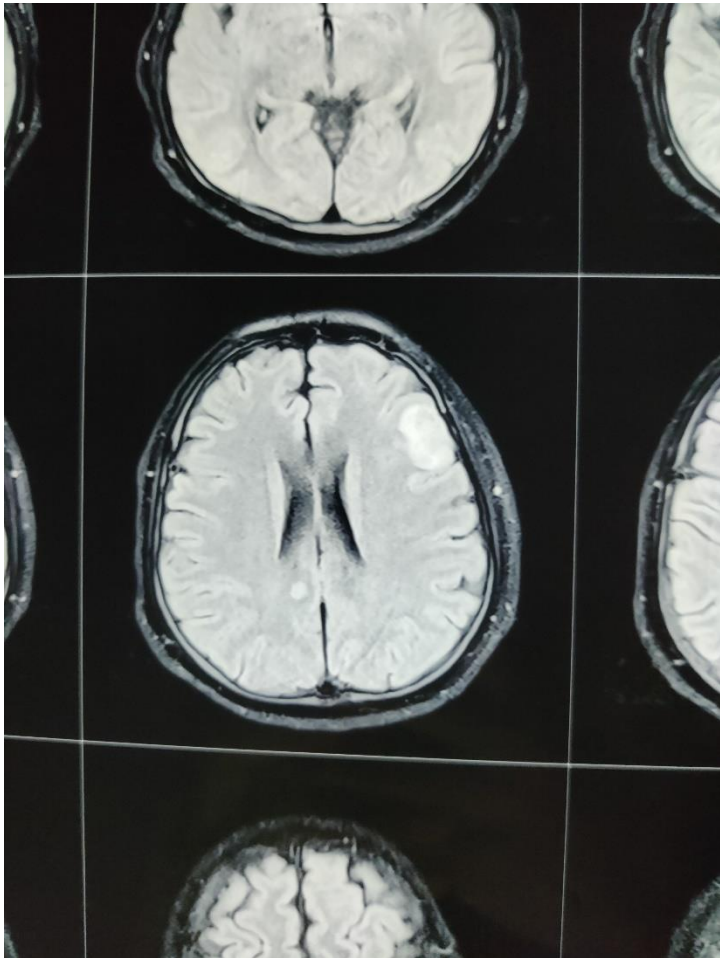
Investigations at previous hospital

- S.galactomannan-4.29
- CSF Galactomannan-3.15
- S B D Glucan- 410
- CSF B D Glucan-312
- Blood culture-Kleibsella pneumonia
- MRI brain(21/9/22)- Hyper intense lesion with areas of microhemorrhage in left frontal and right parietal lobe
- MRI Brain ,orbit(23/9/22)- Left periorbital and orbital cellulitis, no bony erosion, choroidal detachment, discrete lesions with perilesional edema in left frontal and right poster superior parietal lobe
- MRI PNS-visualized PNS normal
- EEG-severe encephalopathy

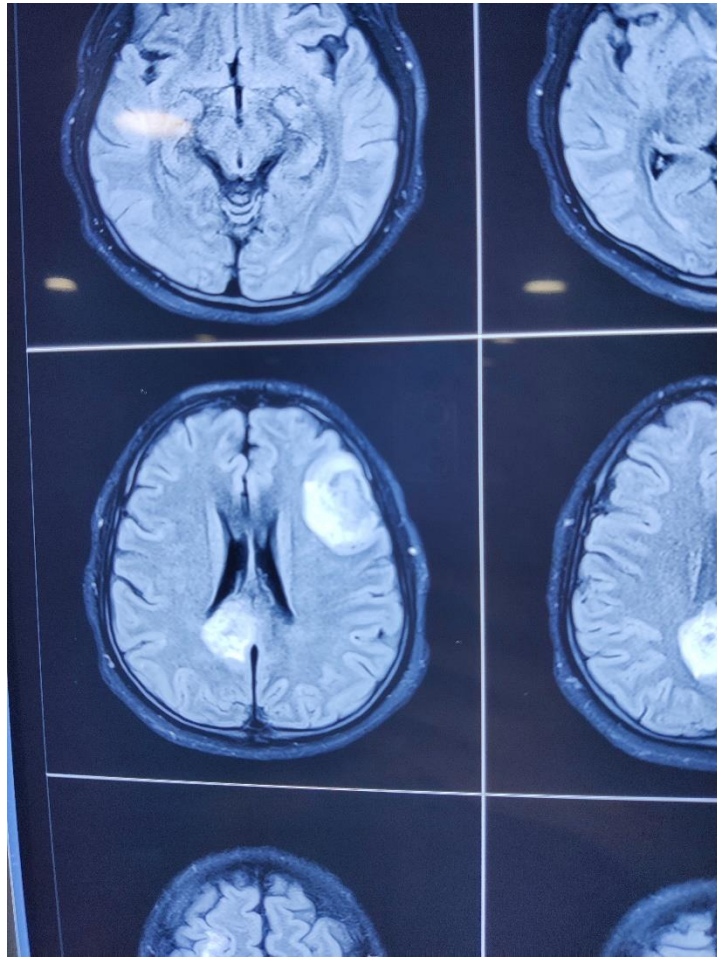
Referred to Sterling Hospital on 23/9/22

On going Medications

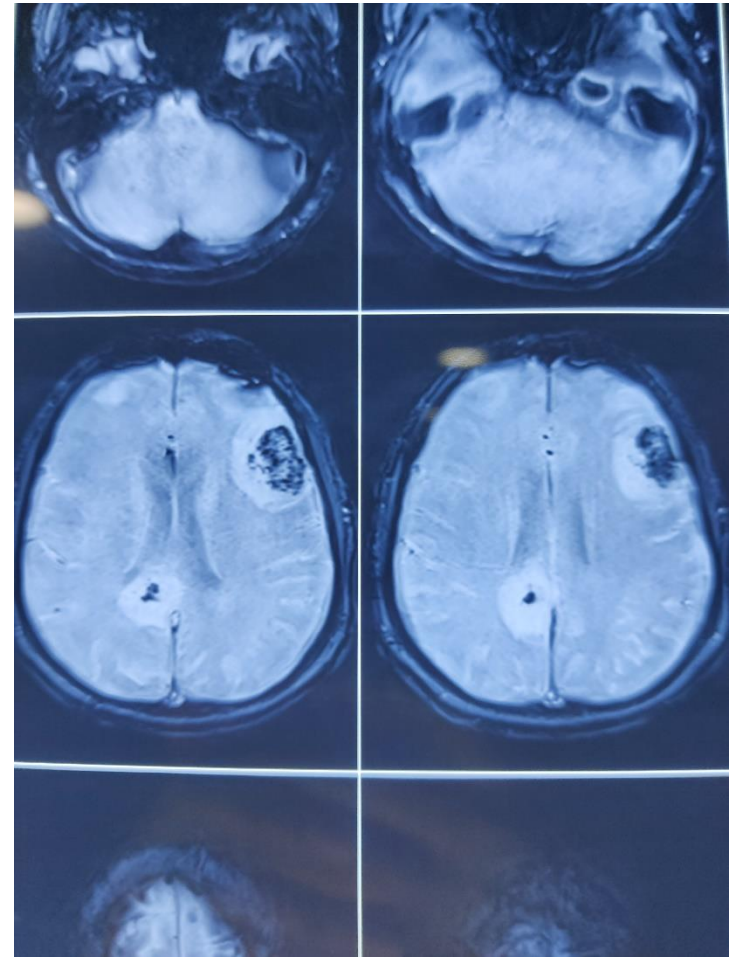
Meropenem, Polymixin B, Minocycline, amphotericin (1st dose) +supportive care



21/9/22



23/9/22



23/9/22

Summary

- Young male with dengue shock syndrome, discrete Brain lesions and bacteremia.

Sterling hospital

- On admission Patient was febrile, irritable, tracheotomised
 - T-102 F
 - Pulse-112/min
 - BP-140/90 mm hg
 - RS-B/L crepitations
 - CVS-no murmur
 - CNS- irritable, moving all 4 limbs, left pupil dilated ,not reacting to light
 - Left proptosis, chemosis
 - Central line in situ
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- Routine investigations, blood cultures sent(central +peripheral), HRCT thorax done
 - Antibiotics, supportive treatment continued
 - Neurophysician and neurosurgeon reference done.



	24/9	25/9	26/9	27/9	28/9	29/9	30/9
Hb	10.1	8.5	8.7	8.1	7.9	7.9	7.4
TC	9000	6300	5100	7000	4400	4000	3900
DC							
PLT	83000	129000	131000	170000	155000	67000	185000
S.Albumin	2.64						
SGPT	379		167		113	92	
SGOT							
Billirubin	2.51						
PT/INR	19.9/1.48						16.9/1.25
Creatinine	2.11	2.73	2.43	2.20	2.29	1.84	
Ferritin	4714					453.51	
Crp	7.80				9.7	10.3	10

- HRCT thorax- Consolidation in right upper lobe, basal segment of bilateral lower lobes. GGO in peri-bronchovascular – infective pneumonitis ? Aspiration pneumonitis
- MRI Brain with orbit(24/0/22)- left posterior uveitis, chorioretinitis, choroidal detachment, multifocal brain lesion with peri-lesional edema and internal haemorrhage, left orbital cellulitis
- Relatives explained about need and risks of neurosurgical intervention
- Aspiration of left frontal lesion done
- Pus sent for Direct microscopy, fungal, bacterial culture, HPE

- KOH- many Septate fungal hyphae
- Intravenous Voriconazole started-6 mg/kg BD day 1 f/b 4mg/kg BD
- S. creatinine monitored daily
- Fungal culture-Aspergillus Flavus
- AFST done- Voriconazole MIC-0.125, AMB-4
- IV voriconazole changed to oral after 5 days
- Voriconazole trough level-6.7 (6th day of oral therapy)
- Dose of voriconazole reduced from 300 mg BD to 200 mg BD
- Tracheal aspirate was sent for microscopic examination
 - No fungal elements, galactomannan negative



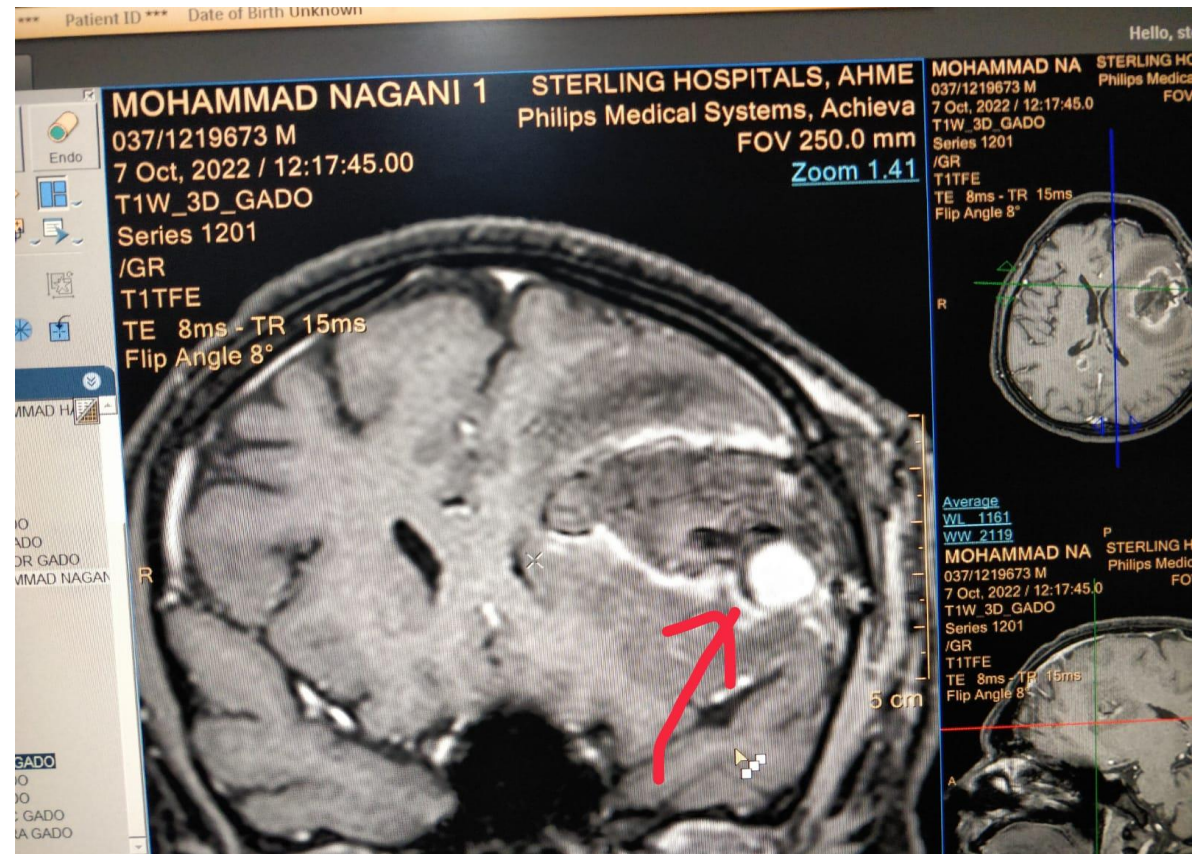
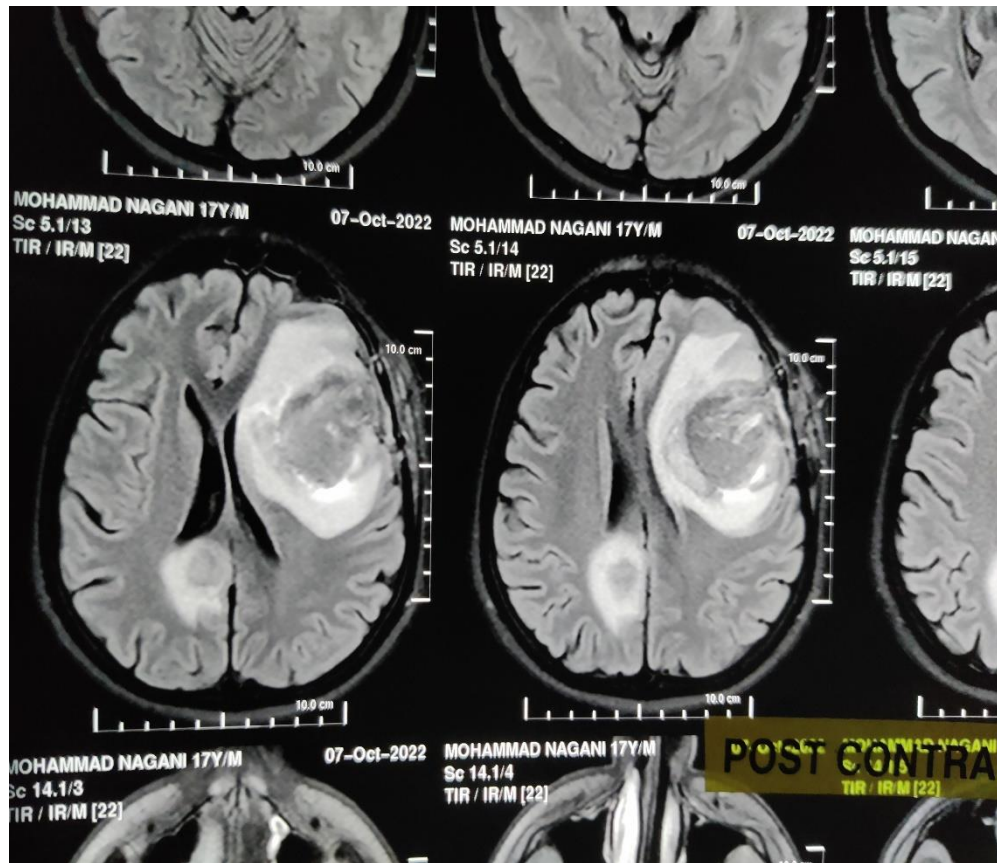
- Blood culture (central line)- MRSH, Candida Paropsilosis
 - Peripheral Blood C/S sterile
 - Central line removed
 - Teicoplanin, voriconazole continued
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- Neurology improving-Concious, Follows verbal command
 - Proptosis reduced
 - Tracheostomy closed, stable on room air.
 - Repeat blood cultures sterile
 - Neurology getting better.. well oriented, communicating well

Final diagnosis

- Post Dengue Multiple aspergillus brain abscess with lung consolidation , CRBSI (CONS, Candida paropsilosis)

TOO EARLY TO BE HAPPY

- 7/10/2022- Patient became drowsy
- MRI Brain repeated- New appearance of left frontal haemorrhage with vasogenic edema and midline shift. Mycotic aneurysm adjacent to haemorrhage. Previous lesions regressed.



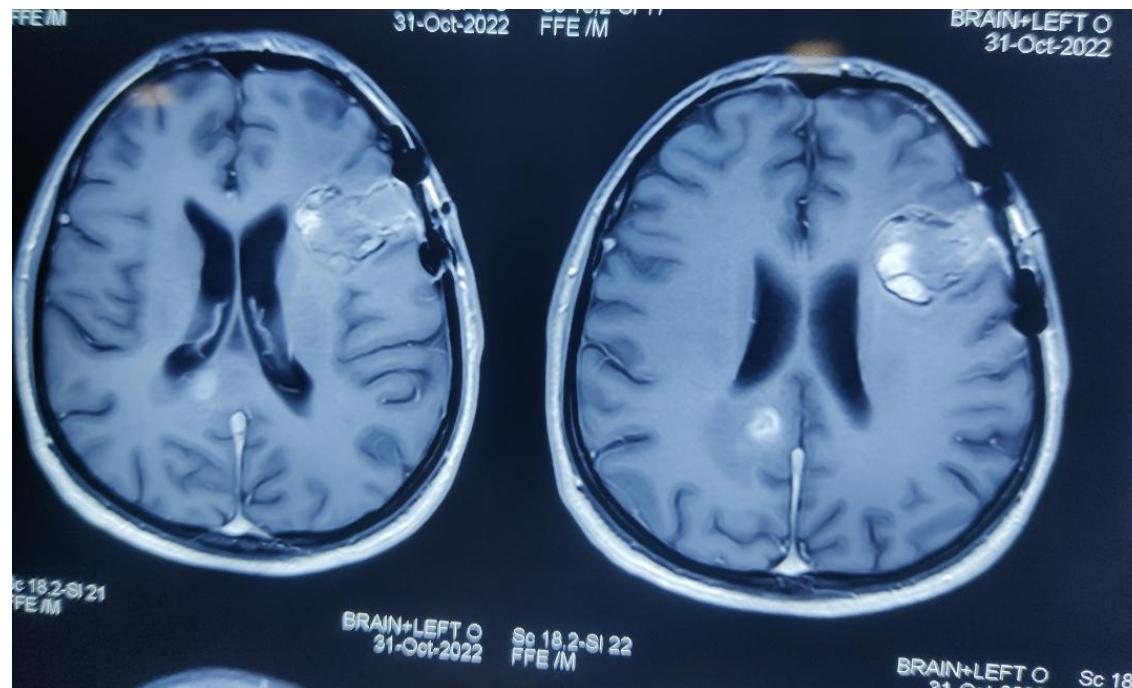
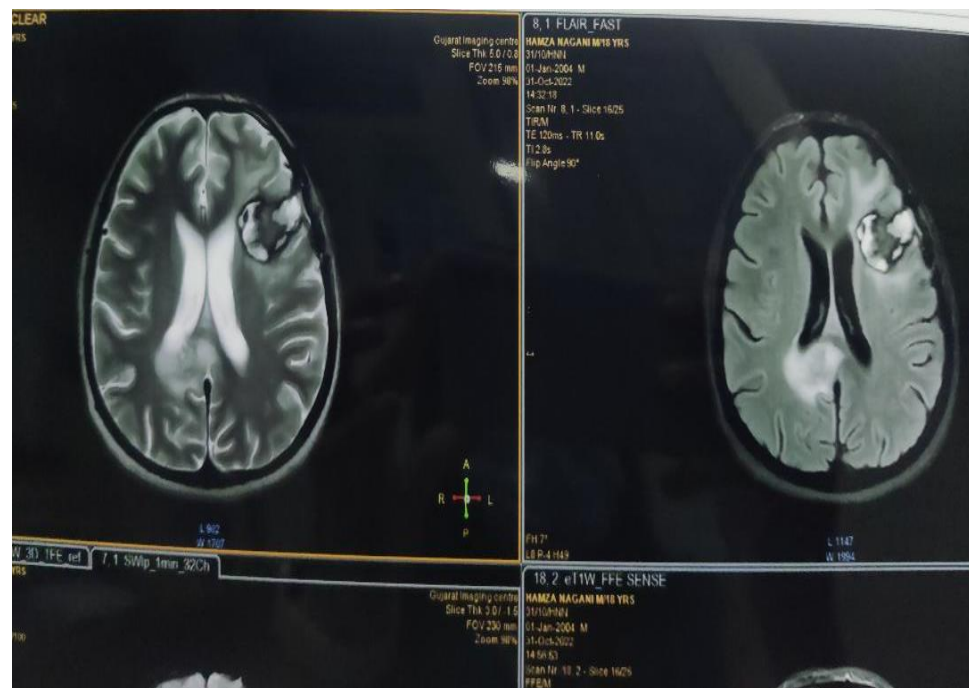
Further course

- Mannitol given, Key hole craniotomy done again.
- Aspiration of contents done, aneurysm resected.
- Repeat samples sent for microbiologic examination
- KOH-no fungal elements
- Fungal culture sterile

- Sensorium improved
- Patient shifted to room

- Voriconazole level repeated after 5 days of dose adjustment
 - Repeat level-0.97 (re-confirmed with assuring proper drug administration and blood collection)
 - Dose of voriconazole increased to 300 mg BD
 - Trough level after dose adjustment -1.5
 - Dose modified- 400 mg BD
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- Discharged with voriconazole on 17/10/2022
 - Voriconazole level with modified dose-3.1

Follow up MRI-31/10/22



Invasive Fungal infections following viral infections

- Influenza- IAPA
- Covid- CAPA, CAM, other molds, candidiasis
- Dengue- Aspergillosis, Mucormycosis

Invasive Fungal Infections in Dengue Recovered Patients: A New Phenomenon in the Covid-19 Era

Pawan Singhal ¹, Anshu Rawat ¹, Shivam Sharma ¹, Anjani Kumar Sharma ¹, Kailash Singh Jat ¹, Shubham Agarwal ¹, Sunil Samdani ¹, Sunita Agarwal ¹, Man Prakash Sharma ¹, Sudheer Bhandari ²

3 patients had presented to the out-patient department of E.N.T at a tertiary level teaching hospital in East India with complains similar to rhino sinusitis. - All 3 were mucormycosis
[*Indian Journal of Otolaryngology and Head & Neck Surgery*](#) -4 September 2022

October 2008, Vol 134, No. 4_MeetingAbstracts
Abstract: Case Reports | October 2008

**CEREBRAL AND PULMONARY
INVASIVE DISSEMINATED
ASPERGILLOSIS IN
IMMUNOCOMPETENT PATIENT**

CNS aspergillosis

- Aspergillus Fumigatus is the most common human pathogen
- The lungs are the primary site of infection- spores by inhalation.
- CNS infection may occur through different ways:

Hematogenous dissemination from the lungs

Direct Extension From The PNS And Orbits

Direct inoculation at the time of surgery

- CEREBRAL ASPERGILLOSIS :
 1. Abscess - Most Common
 2. Cerebritis
 3. Infarction,
 4. Granuloma,
 5. Mycotic Aneurysms
 6. Meningitis, Ventriculitis- Rare

- Major risk factors for invasive aspergillosis
 - ❖ hematologic malignancies,
 - ❖ bone marrow transplantation, hematopoietic stem cell transplantation,
 - ❖ solid organ transplantation,
 - ❖ AIDS
 - ❖ chronic pulmonary diseases
 - ❖ immunomodulating drugs.
- Hematogenous dissemination from invasive lung infection is more common among immunocompromised patients,
- Extension from sinusitis, mastoiditis, and direct penetration of the mold into the brain secondary to cranial trauma, injury, or neurosurgery are more commonly seen in immunocompetent hosts

CSF biomarkers

- Patients with a proven or probable Aspergillosis based on culture, tissue biopsy, or the GM test in serum or BAL fluid in combination with a suspected radiological cerebral finding, 88.2% had a positive CSF GM test, while cultures were positive in only 17.6% of the cases. ⁵
- The CSF GM antigen test is included in the revised EORTC/MSG criteria ([5](#)).
- GM detection in CSF showed a good diagnostic performance when an ODI cut-off of 0.5 to 2.0 was used, and using GM in CSF, Cerebral aspergillosis can be diagnosed or virtually ruled out without the need for cerebral biopsy.

Overall, the prognosis of patients with cerebral aspergillosis is poor.

One-year mortality rate was significantly higher among patients with CNS fungal infections compared to those with a pulmonary infection as a contributory factor

Take home messages

- TDM for antifungals is very important
- Tissue diagnosis is extremely important
- CSF fungal biomarkers have a good diagnostic performance, high negative predictive value.
- Good hospital control practices can avoid many complications.