

# Axone



The official publication of Society for Neurocritical Care [SNCC]

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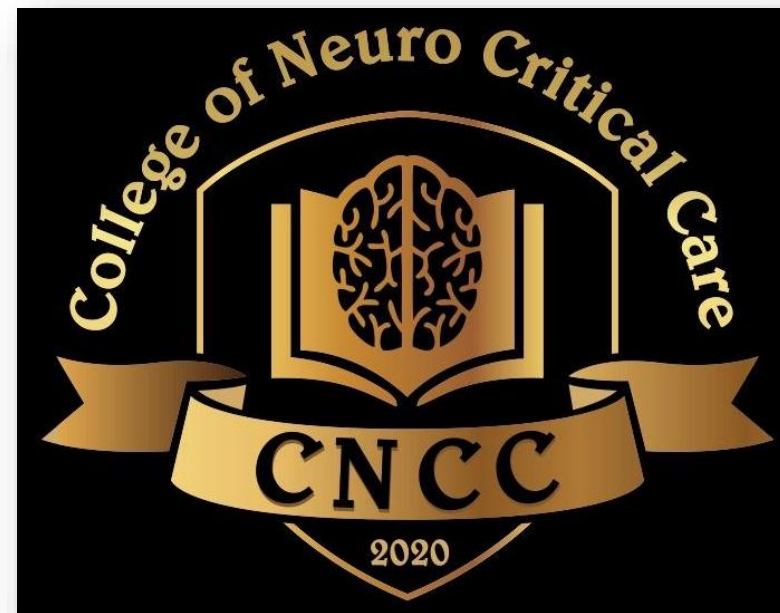
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# Message: President (SNCC)



Dr Kapil Zirpe  
Head – Neurotrauma Unit  
Grant Medical Foundation  
Ruby Hall Clinic  
Pune, India

Dear Colleagues,

Covid-19 second wave has taken a serious turn which led to disrupting normal social life. It has created a huge stress and challenges to the healthcare system across India. It has also appeared to be different from last year's surge in several ways, increasing worries, and anxiety. An obvious difference was that second wave was far more infectious and virulent in the terms of infection rate, though the trajectory of death tally so far appears to have been mercifully dissimilar to that seen during the first wave. Most important, there has been a sudden surge of cases in a short span of time. If there is one thing which would be needed soon after the second wave of Covid 19 is over, it is the need to look back and analyze what we could have learnt from the past, should have done and should do now, immediately and urgently. No need to be a reactive mode, but plan for the future.

We have planned various academic activities through College Board for 2021. The online platform is still the most appropriate way of continuing our academic traditions in the present scenario. I sincerely urge to all office bearers to get involved in academic activities. Since this year, might due to pandemic, we have to cancel our annual meeting. Let's gear up ourselves for forthcoming Asian Ocean annual congress at Delhi. Dr Sapra will soon update everyone regarding preparations.

We need to get back to new normal at the earliest.

I am thankful to my team in EC and College Board for enduring me and working hard.

Warm regards



# Message: Vice Chancellor (CNCC)



Prof Joseph Matthew  
Department of Neurosciences  
Christian Medical College  
Vellore  
India

Dear Members

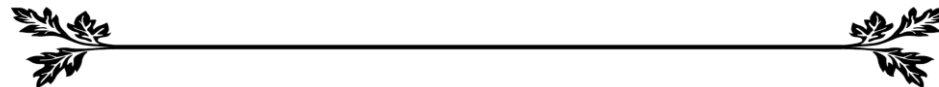
The functioning of the College of Neurocritical Care is steadily improving.

The board of the CNCC is meeting regularly to discuss its function and solve any problems encountered.

Educational material in the form of an easy to use manual is in the process of being developed, and there is a plan to bring out a textbook of Neurocritical Care. Protocols are also being developed for regular communication between the College, the course coordinators at each centre and the Fellows to ensure that any problems with training are dealt with expeditiously.

There is still a lot of work to be done to ensure smooth functioning of the College as would be expected from any new organisation, but we are determined to achieve this goal as soon as possible.

Best wishes.



# Message : Secretary (SNCC)



Prof Prashant Kumar  
Dept of Anaesthesiology & Intensive Care  
Pt BDS, PGIMS at University of Health Sciences  
Rohtak  
India

Dear Friends

When I look at the Society of Neuro Critical Care, I see passion and boundless energy. I see people not content to sit at home, criticize from the side-lines, or leave it to others to do; but what I see in this society, is people who want to get involved, often at considerable personal sacrifice and even risk. I see men and women reaching across gulfs of identity, and culture to find common purpose and strength for the benefit of members of the society and speciality in particular.

I congratulate and thank Dr Hemanshu Prabhakar for taking the task and to bring out the news letter for the society in these tough days.

I am happy to share with you all that energy of all the members made it possible for the society to plan and we are going ahead with Conference of NCC Asia Oceania in Delhi. I am sure the leadership of Dr Zirpe and Dr Sapra and team will make this event memorable with high standards of academics. The Fellowship in NCC is already rolled out in association of ISCCM and more and more institutes are interested In joining hands.

The challenge that has brought us all together is the zeal to work for betterment of care of NeuroCritical care and I am sure together we will spread the message across the society.

I pray to god for the safety and wellbeing of all the members and their family in these difficult times and wish you all the success for providing care. Also request you all to share your wellbeing and ask the colleagues around you to maintain mental health which might get affected in these difficult times due to known and unknown forces.

Best Wishes



# Message : Secretary (CNCC)



Dr Vasudha Singhal  
Department of Neuroanesthesia and Neurocritical Care  
Medanta The Medicity  
Gurugram  
India

We welcomed this year with feelings of hope, but with the Covid-19 pandemic spreading uncontrollably once again, we are now learning to make light of awful situations to stay positive! Life must go on, and so should the process of learning. The College of Neurocritical Care (CNCC) continues to put in hard work to streamline the educational processes of the SNCC, so as to ensure a smooth and uninterrupted academic growth of Neurocritical Care in the country. The Fellowship of Neurocritical Care (FNCC), that we launched in October last year in collaboration with the Indian Society of Critical Care Medicine (ISCCM), has enrolled six candidates so far across three centres – Medanta-the Medicity, Gurgaon (Course Director Dr H.Sapra); Ruby Hall Clinic, Pune (Course Director Dr Kapil Zirpe); and Kovai Medical Centre, Coimbatore (Course Director Dr N.Selvarajan). Two centres have applied for starting the ISCCM/SNCC joint fellowship and are awaiting inspection. We hope to add many more in the near future. The CNCC leadership aims to consolidate the course structure and academic activities for the fellows so that they come out as confident neurointensivists at the end of their fellowship.

We have planned the Comprehensive Neurocritical Care Course during the 4<sup>th</sup> Annual Conference of SNCC in July, and an ENLS course during the Asia Oceania Chapter of NCS Annual Conference planned in September. We also have on cards, a monthly teaching programme, starting this April on the last Friday every month, the details of which will follow soon. We aim to take Neurocritical Care to new heights and percolate neurocritical care education to the last level.

Hoping to move ahead and soar high above the winds to make a mark!

Keeping up all the positivity

Best wishes





# Message : Zonal Member (South)



Dr N Selvarajan  
Head - Department of Anaesthesiology and Critical Care  
KMCH  
Coimbatore  
India

The COVID pandemic has taken most of our time and all our intensivists including the Neurocritical care fellows are very busy looking after the COVID ICUs. After the first wave, we had a breath of relief for a few months and once again the numbers are increasing; multiplying is an apt word. There remains a pressure to increase the COVID beds in wards and ICU. The beds can be increased but what about the personnel – doctors, nurses, respiratory therapists and so on! A situation, none of us have faced before. We have to find novel ways to adjust and adapt to cope up with the situation.

We are regularly trying to create an awareness among the intensivists, neurophysicians and neurologists about the our new Society, Society of Neurocritical Care (SNCC) and encourage doctors becoming life members of SNCC – Membership Drive.

I am pleased to share that two more Institutes from South Zone have applied for accreditation to conduct FNCC course – Christian Medical College (CMC) Vellore and the Royal Care Superspeciality Hospital, Coimbatore. Hopefully, the inspection will be conducted soon.

We have already initiated the process of enrolling the second candidate from Kovai Medical Center & Hospital (KMCH), Coimbatore for May, 2021.

We look forward to participating in the monthly academic meetings decided by the College of Neurocritical Care (CNCC). KMCH is also planning to do interesting case presentations in the upcoming academic meet in May 2021.

Best wishes.





## Operation Theatre Management Challenges During Covid-19 Pandemic

**INTRODUCTION:** Coronavirus disease has created a tremendous pressure over health care system globally. During COVID-19 pandemic there has been many changes to practices. The operating room environment is a very different workplace. The general dynamic in operating rooms is less relaxed due to a multitude of challenges. Transforming operating suites into COVID-19 safe workspace overnight has been challenging. Effective implementation of standard protocols pertaining to Covid-19 is a big challenge for hospitals within the existing limitations of time and resources.

**THERE ARE VARIOUS TYPES OF CHALLENGES FACED IN OPERATING THEATRES DURING COVID19 PANDEMIC:**

**I. TRAINING THE TRAINED AND NON-TRAINED:** This is the most challenging task we faced because there are a lot of misconception about the disease. As this is a new virus, majority of the health worker do not know the exact characteristic of the virus which lead to the confusion.

**Solution:** The sudden changes in general health care practices also created havoc among health care workers so to make them understand the severity of the disease, teaching session along with demonstration of donning and doffing techniques are held

frequently for the nursing staff, technical staff, hospital attendant, and sanitation personal. Frequent guidelines from government are also updated to follow and accept the current situations.

**COORDINATION AMONG DIFFERENT DEPARTMENTS:** was also a big challenge like Hospital administration department, procure department, general store department, air condition and sanitation department. The co-ordination and collaboration of Hospital Administration Department is required to form the multidisciplinary teams for the assignment of different jobs to the designated personnel such as special infection control committee, Nodal officer etc.

**PROCURE DEPARTMENT:** to provide sufficient supply of Personal Protection Equipment /DEMAND for the smooth functioning of Operation theatres (OR). So minimum personnel are allowed in the Operation Room for the judicial use of PPE.

**GENERAL STORE DEPARTMENT** –Frequent disinfection and fumigation due to sudden changes of health care practices created increase demand of disinfectant.

**AIR CONDITIONING DEPARTMENT** – Separate AHU required for each OR for the maintenance of OR pressure from positive to negative.

**SANITATION DEPARTMENT-** is require to provide 24/7 services for collection and disposal of COVID waste.

**CREATING DONNING AND DOFFING AREA:** Creating donning and doffing area in existing set up was another challenge due to limited hospital layout where new construction is not possible. Ideally separate operating suite with isolated ventilation system and negative pressure is required.

**Solution:** Space management was done by dedicating one of the operation room for doffing. For donning, area near to the scrub station used and boundaries created by using screens to compromise with the need for priorities. Shower facility after doffing, near to the exit point of doffing area was not possible; so shower in changing room and change of scrub suite provided, and designating the OR for suspected Covid cases near to changing room area.

**PATIENT RECEIVED IN OPERATION THEATRE:** Here the challenge is WHERE, WHEN and WHO will receive the patient.

**Solution:** A protocol was set to receive the patient. Designated area, time and staff was fixed. OR team would be ready wearing PPE before calling the patient. Received the patient in OR on time to avoid waiting in the corridor. All patient would be covered properly along with the face mask and shifted straight to the designated OR. Cleaning and moping the passage with disinfectant was performed immediately.

**HEALTH ISSUES RELATED TO THE PPE AND N-95 MASKS:** There are lot of health problems reported among health care workers related to continuous use of PPE and N95 mask such as excessive sweating, dehydration, dizziness, muscle cramps, anorexia, weight loss, headache, breathlessness, rashes, skin breakdown etc. Due to that work efficiency decreased and cognition impaired. Prolong use of PPE also caused discomfort, movement restriction, impaired staff recognition and chances of falling down.

**Solution:** Ensured that the staff going inside the OR was healthy and hydrated. Removed unnecessary equipment and machinery from the OR to prevent any fall and injuries. Enforcement of WHO safety checklist.

**TIMELY TAKE AWAY OF COVID WASTE:** The problem faced here was waste disposal after covid -19 cases. There is Set timings for waste collection and limited staff is appointed to take away the disposals. Due to that there is Storage of waste inside the doffing room leads to the cases in queue.

**Solution:** Coordinate with sanitary personnel and Displayed the helpline number in OR. Instruct the staff to timely and routinely inform the designated sanitary personnel to collect the COVID waste. Advised them to give priority to OR waste collection.

**Hazards related to repeated fumigation and disinfection**

There are many changes in routine work practices. Repeated fumigation and disinfection also cause many health problems like allergic reactions, dry and cracked skin, inhalation of disinfectants, rusting of instruments and equipment, frequent damage to the machinery.

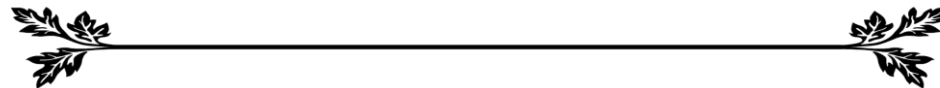
**Arranged** fogging machines with short exposure time. Covered the machineries to minimize the damage. Enforcement of frequent hand washing and use of moisturizer and. Frequent oiling of instruments.

**Death of COVID-19 patients in operating room-** In our protocol death never declared in operation theatre so this is another challenge faced as O.T staff is less familiar with the process of COVID positive patient death. We know, lots of formalities have to be carried out before shifting of patient to the mortuary.

**Solution:** Designed a written plan of action for care of deceased in OR and instructed the staff about it. Zip bags were made available in OR.

**STAFF MANAGEMENT:** Increase in covid-19 cases day by day causes shortage of staff due to posting in trauma centre and other COVID wards lead to increased workload. Quarantine of health workers after becoming covid positive also lead to shortage of staff. There was anxiety among the staff related to their family health also.

**Solution:** Creating duty rosters with the highest rotation possible. Assignments were given in such a manner so that there was a limited staff exposure at any given time. Strict and frequent screening of the segregated staff was done.



# From the Pharmacopoeia



Dr Indu Kapoor

Associate Professor

Department of Neuroanaesthesiology & Critical Care

All India Institute of Medical Sciences

New Delhi, India

**Name:** Magnesium Sulfate [MgSO<sub>4</sub>]

**Chemical name:** Magnesium Sulfate

**Mechanism of action:** MgSO<sub>4</sub> acts on N methyl D aspartate [NMDA] receptors as an antagonist to produce its analgesic effect. MgSO<sub>4</sub> regulates the movement of ions like calcium, potassium as well as sodium through voltage gated channels within myocardial tissues and thus produces its anti- dysrhythmia effect. MgSO<sub>4</sub> also has anticonvulsant effect. It triggers cerebral vasodilatation and hence reduces ischemia generated by cerebral vasospasm during seizure activity.

**Route:** Intravenous & intramuscular.

**Dosage:**

**-For severe hypomagnesemia:**

Intravenous: 1-5 gram slow divided doses daily till serum levels are normal.

**-For Eclampsia:**

Intramuscular: 1-2 gram followed by 1 gram every 30 minutes until relief is obtained.

Intravenous: 1-4 gram in 10% dextrose slow with great caution.

**In Children:** Intramuscular 20-40 mg/kg in 20 % dextrose

**Pharmacokinetics:** MgSO<sub>4</sub> is 30% protein bound and 70% drug is free. It is excreted through kidney. The onset of action of intravenous MgSO<sub>4</sub> is immediate and for intramuscular route it is 60 minutes. The duration of action for intravenous route is 30 minutes and for intramuscular route is 3-4 hours.

**Pharmacodynamics:** MgSO<sub>4</sub> depresses central nervous system, produces anticonvulsant effect by causing cerebral vasodilatation, blocks peripheral neuromuscular transmission. It also produces analgesic effect by acting on NMDA receptors. In cardiovascular system, MgSO<sub>4</sub> causes sympathetic blockade and thus reduces blood pressure and heart rate. In respiratory system, MgSO<sub>4</sub> generates bronchodilatation by inhibiting calcium ion influx in to the cytosol, and histamine release from mast cells. MgSO<sub>4</sub> also has tocolytic effect on uterus.

**Indications:**

- a) Severe Hypomagnesemia
- b) Eclampsia
- c) Drug resistant epilepsy
- d) As an adjuvant to primary anticonvulsant drugs in epilepsy.
- e) Preterm labour
- f) Torsades de pointes
- g) Cardiac arrest



### **Contraindications:**

- a) Hypersensitivity
- b) Heart block
- c) Hypermagnesemia
- d) Hypercalcemia
- e) History of allergy to MgSO<sub>4</sub>

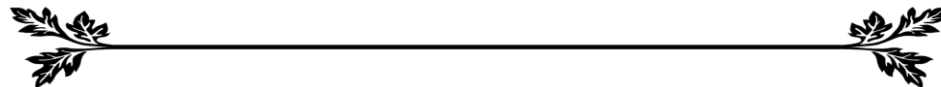
### **Drug interactions:**

- No significant drug interaction mentioned in literature.

**Side effects:** Allergic reactions, flushing, sweating, respiratory depression, hypotension.

**Precaution:** Patients with heart block, high magnesium or calcium levels, low potassium levels, low blood pressure, kidney impairment, myasthenia gravis, pregnancy

**Toxicity:** Flushing, sweating, hypotension, respiratory depression, cardiac arrest.



# Clinics....



Dr Shalini Nair  
Department of Neurosciences  
Christian medical college  
Vellore  
India

A 30 year old lady presented with severe head injury two hours after an alleged road traffic accident. According to the brain trauma foundation guidelines (I) she underwent intracranial pressure (ICP) monitoring. The pressures were constantly high despite maximum medical measures (fig I).

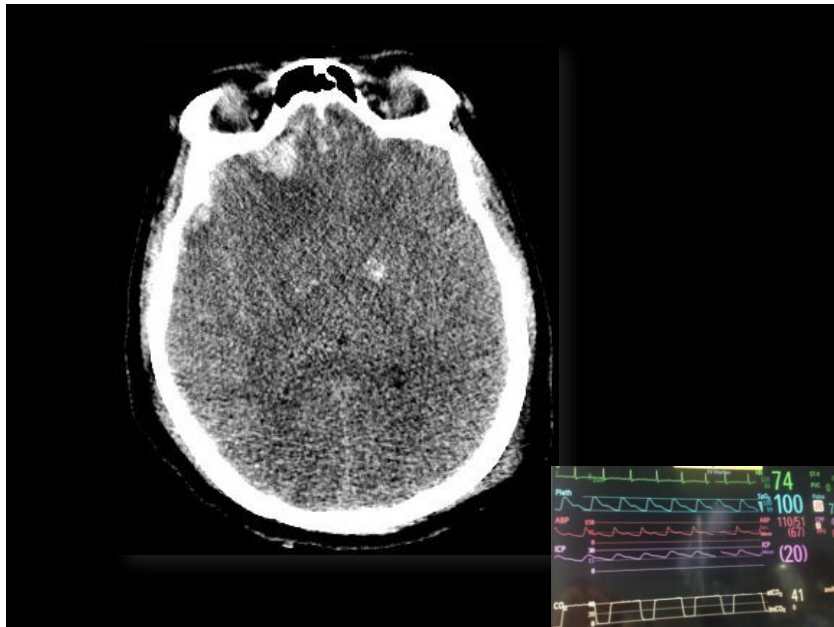


Figure 1a: Diffuse cerebral edema with right frontal hematoma and raised ICP as depicted by ICP monitor

She also had severe hypoxaemia caused by neurogenic pulmonary edema from the trauma (fig 2). She was ventilated with high positive end expiratory pressure.

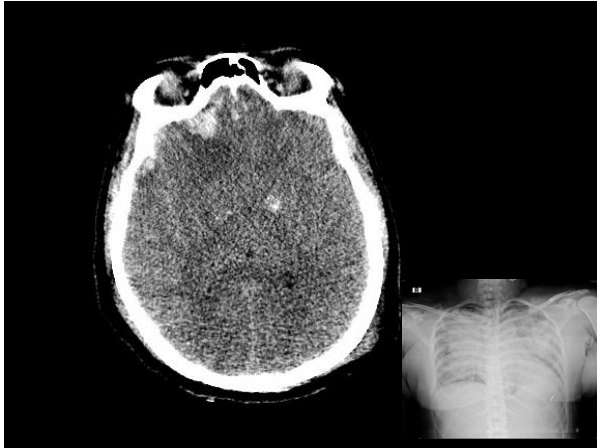


Figure 2: Neurogenic pulmonary edema- culprit for global cerebral edema

As the pulmonary edema resolved and oxygenation improved the cerebral edema also reduced (fig 3). The ICP reduced even when frontal contusions were enlarging. A surgical intervention was averted.

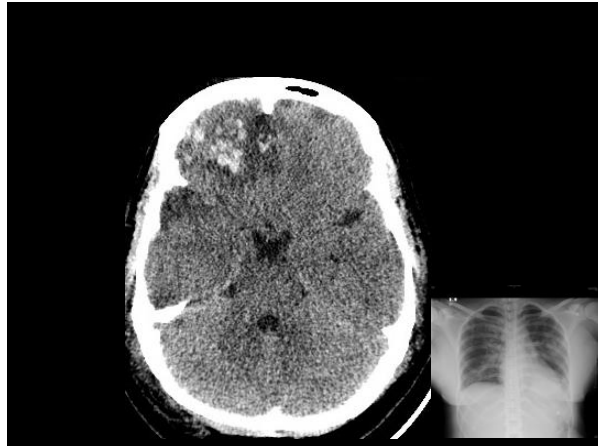
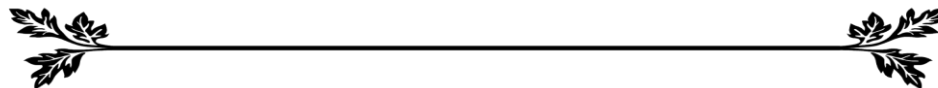


Figure 3: Cerebral edema resolved once pulmonary edema improved.

**Pearls for learning:** Cerebral edema disproportionate to underlying brain injury should be considered in entirety with rest of the body. Systemic causes contributing to global cerebral edema should be looked into.

Reference: I. Guidelines for the management of severe traumatic brain injury- 4<sup>th</sup> edition.



# Case report



Dr Neeta Karmarkar  
Consultant Anaesthesiologist  
Department of Anaesthesiology  
Nanavati Max Superspeciality Hospital  
Mumbai  
India



Dr Janhavi Makwana  
DNB - Resident  
Department of Anaesthesiology  
Nanavati Max Superspeciality Hospital  
Mumbai  
India

A 32 year old nulliparous, married female came with the history of dizziness, imbalance while walking, slurred speech, deviation of the angle of the mouth and left handed weakness. On examination she was afebrile, on attaching a cardioscope her pulse was 30 beats/ min, BP was 100/70 mm Hg and Spo<sub>2</sub> 100 % ,neurological examination showed patient was irritable, disoriented and drowsy. GCS was 11/15, left hand power was 2/5 and pupils were bilaterally equal and reacting to light. 12 lead ECG was done which showed a rate of 28/ min. Cardiology was called and he advised to give Inj. Atropine 0.6 mg IV. An ECG was repeated but the heart rate did not show increase in heart rate. Priority was given to diagnosing the cause of neurological deficit hence patient was shifted to MRI. Patient was diagnosed to have right acute MCA infarct.<sup>1</sup> She was posted for emergency mechanical thrombectomy under GA. Based on her ECG she was diagnosed to have complete heart block. Hence the cardiologist decided to insert a temporary pacemaker before GA in cath lab. Temporary pacemaker was inserted under MAC. Rate was set at 50. Patient was uncooperative so she was given titrated doses of Inj. Midazolam 1 mg IV and Inj. Fentanyl 50 mcg IV. After confirming position of the temporary pacemaker under C-ARM, rapid sequence induction was done with Inj. Etomidate 20 mg and Inj. Rocuronium 50 mg. patient was maintained on oxygen, air ( 50/50 ) and desflurane to achieve MAC value of 1.

Invasive blood pressure was monitored and maintained at 120-130 mmHg. Normothermia and normocapnia was maintained. Inj. Dexamethasone 8 mg Iv and Inj. Ondansetron 8 mg IV was given. Decision was taken to electively ventilate the patient and she was shifted to the ICU. CT scan the next day showed good flow in the MCA territory. She was weaned off the ventilator on day 2 post procedure. pacemaker was put on stand by mode. An ECG was repeated which showed fresh T wave inversion. 2 D echo was done which showed an ejection fraction of 45% and mild RWMA. So patient was posted for a coronary angiography on day 3. It was normal. Patient was maintaining an intrinsic heart rate of 45-50 beats per minute and showed good chronotropic response to mobilization. Hence the temporary pacemaker was removed. Her final diagnosis was acute right MCA infarct with congenital complete heart block and hypothyroidism.

All her basic blood investigations were done during her stay. She was referred to an endocrinologist for hypothyroidism, haematologist for young stroke and prothrombotic work up. Her T3 - 0.56, T4 – 6.32, TSH – 18.82. Autoimmune workup was also done. She was haemodynamically stable and was discharged on day 6 of admission with further plan of to do extended loop recording for 14 days for intermittent AFIB if any to rule out cardiac cause of stroke

## DISCUSSION

The congenital etiology of CCHB was recognized in 1846. First case was documented electrocardiographically by White and Eutis in 1921. Incidence : rare disorder which affects males and females in equal numbers. The incidence of CCHB is one in approximately 20,000 to 25,000 live births. Patients with CCHB fall into two categories : those with congenitally malformed hearts and those with anatomically normal hearts.

1. 60-90% are associated with an *autoimmune disorder in the affected individual's mother such as SLE or Sjogren's syndrome* <sup>4,7</sup>

CHB may result when maternal antibodies cross the placenta, enter the fetus, and attack the fetal cardiac conduction system. Autoimmune heart block is typically of the third degree and begins in utero

2. *Idiopathic disorder having a familial tendency.* Is seen in non immune cases without structural heart defects. Maybe inherited as an autosomal recessive pattern

3. CCHB related to congenital heart defects like

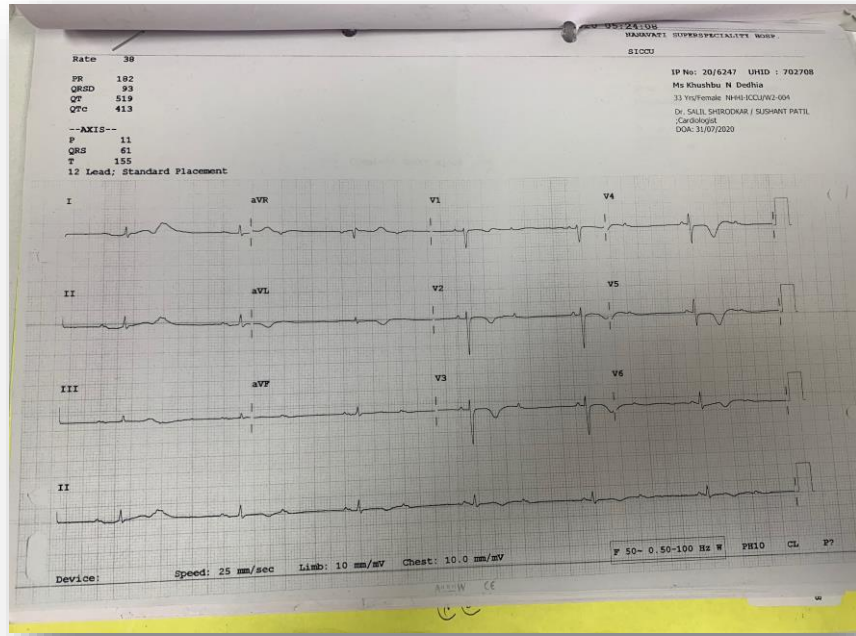
a ) L-looped transposition of the great arteries

b ) Endocardial cushion defects

c ) Syndromes with simple atrial septal defects<sup>2</sup>

In our patient the QRS complex was narrow with no atrial impulses being transmitted to the ventricles. ( fig I.) This favoured complete heart block which was congenital in origin. <sup>5</sup> She had no associated congenital structural heart abnormalities.

Figure I



## PATHOPHYSIOLOGY

Most cases are immune mediated and are characterized by fibrous tissue that either replaces the AV node and its surrounding tissue or by interruption between the atrial myocardium and the AV node.

Effect is that the block is usually at the level of the AV node allowing junctional escape rhythms.

Primary injury is caused by the binding of anti-RO/SSA and /or anti-La/SSB antibodies to the developing AV node and its surrounding tissue.

Apoptosis induces translocation of Ro/SSA and La/SSB to the surface of the fetal cardiomyocytes and induce the release of TNF by macrophages which then results in fibrosis Anti-Ro/SSA and/or anti-La/SSB antibodies inhibit calcium channel activation or the cardiac L-and T-type calcium channels themselves <sup>6</sup>

CCHB in patients with congenital heart defects is directly related to abnormalities in the embryologic development of the specialized atrioventricular conduction tissues that lead to displacement and functional impairment of the AV node and/or HIS bundle <sup>22</sup>

## DIAGNOSIS

### LABORATORY STUDIES

CBC to screen for coincident anaemia or infection

Serum electrolytes including magnesium to look for metabolic imbalance

PT and PTT

Myocarditis related studies such as lyme titers, HIV serologies, PCR

### IMAGING STUDIES

Radiography

Echocardiography ( transthoracic ) a determination of left ventricular function can help determine whether a pacemaker or defibrillator should be implanted

Cardiac CT scanning : helps to appropriately identify patients with third and second degree heart block

### ELECTROCARDIOGRAPHY

Characterized by complete lack of conduction. No P waves cause a QRS complex

R-R interval is very regular if complete AV block exists, so before diagnosing third degree AV block the R-R interval should be measured

QRS width is also reviewed

If the ECG suggests CAD then cardiac enzymes are measured including cardiac catheterization.

## Ambulatory monitoring and diagnostic electrophysiologic studies

### TREATMENT <sup>3</sup>

Pacemaker therapy needs to be considered in asymptomatic patients with CCHB when there is an

1. average heart rate of less than 50 beats per minute
2. Presence of wide QRS complex escapes
3. Ventricular dysfunction
4. Prolonged QTc
5. Complex ventricular ectopy

### FOLLOWUP OF OUR PATIENT

- Patient is neurologically asymptomatic. No residual neurological deficit
- Maintains a baseline heart rate of 45 -50 beats
- She shows a good chronotropic response to activity. Heart rate increases to almost 80 beats/min on a tread mill
- No permanent pacemaker is required at present
- Her autoimmune workup is negative for all markers
- Her TSH has reduced to 10
- Cause : Idiopathic congenital complete heart block



## CONCLUSION

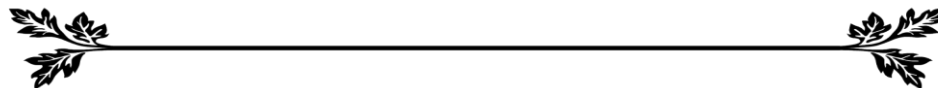
One should always consider the diagnosis of congenital complete heart block at the top of the differential diagnosis when it comes to a young patient without past medical history presenting with CHB.

Most cases of CCHB are immune mediated and presumed to be related to maternal anti Ro-/SSA and/or anti- la/SSB antibodies that enter the fetal circulation during gestation to result in fibrous degeneration of AV node and conduction system.

Treatment of CCHB is challenging. These patients are often young and implanting a permanent PM is not always an easy decision. The select group will benefit from close follow ups, annual echocardiography, and rhythm monitoring by a loop recorder when they opt for a conservative approach without PM therapy.

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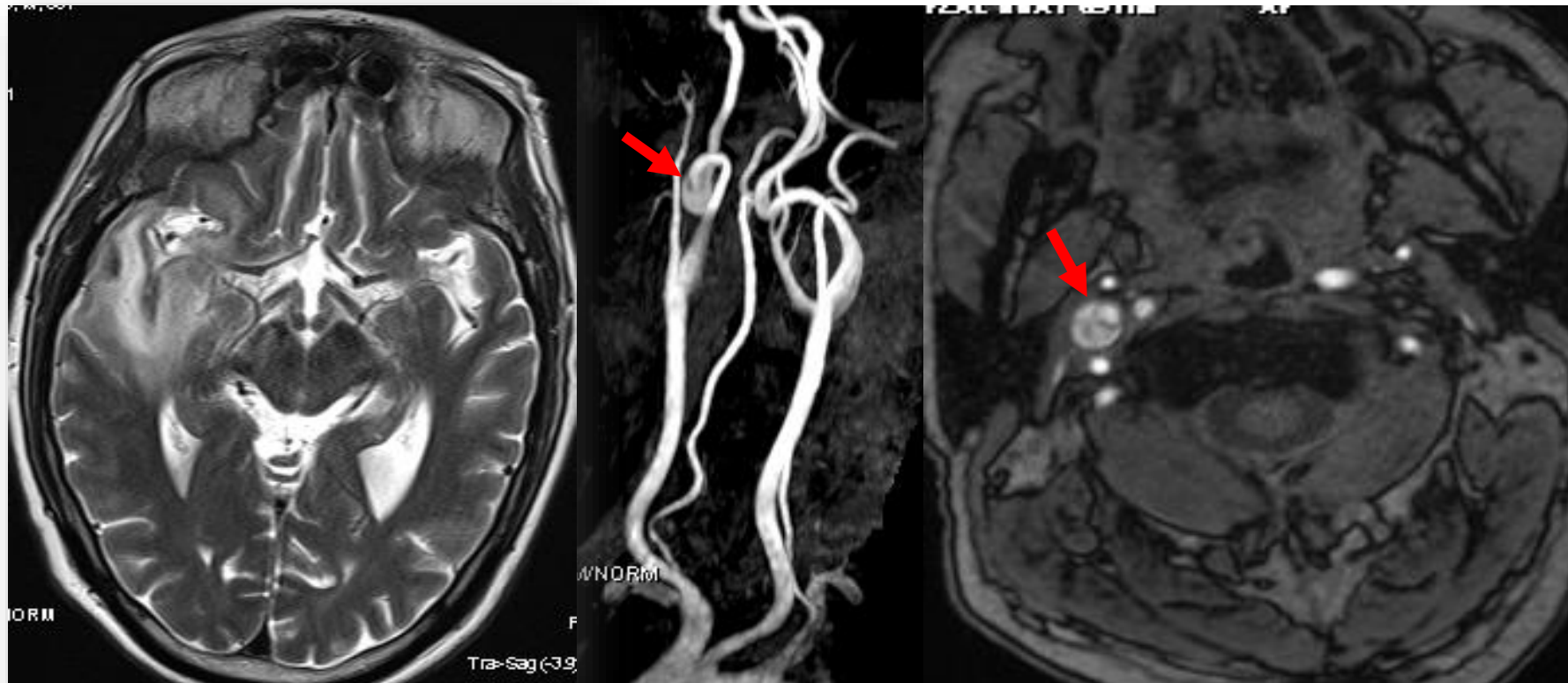


# Neuroimaging



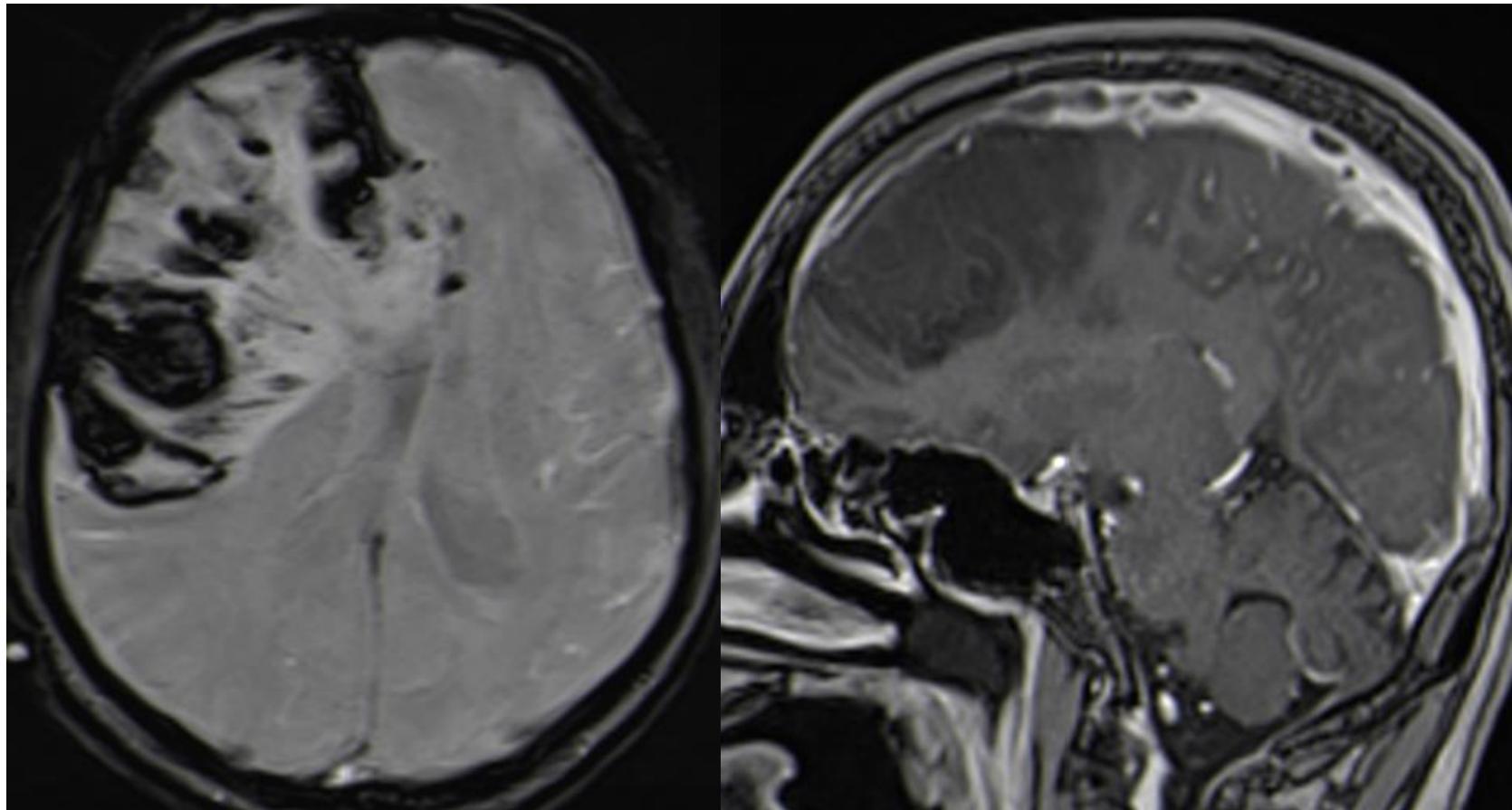
Dr Anshu Mahajan  
Consultant  
Department of Neurointerventional Surgery  
Medanta, the Medicity  
Gurgaon

**A** 52-year-old male presented with left sided weakness of upper and lower limb, dysarthria and facial weakness. MRI was performed which revealed right MCA territory infarct. MR Angiography (TOF) was also done which showed fusiform dilatation at the mid right cervical ICA (arrow). A double lumen is also seen in the right mid cervical ICA on the MRA source image (arrow). **What is the likely etiological diagnosis on MRA?**



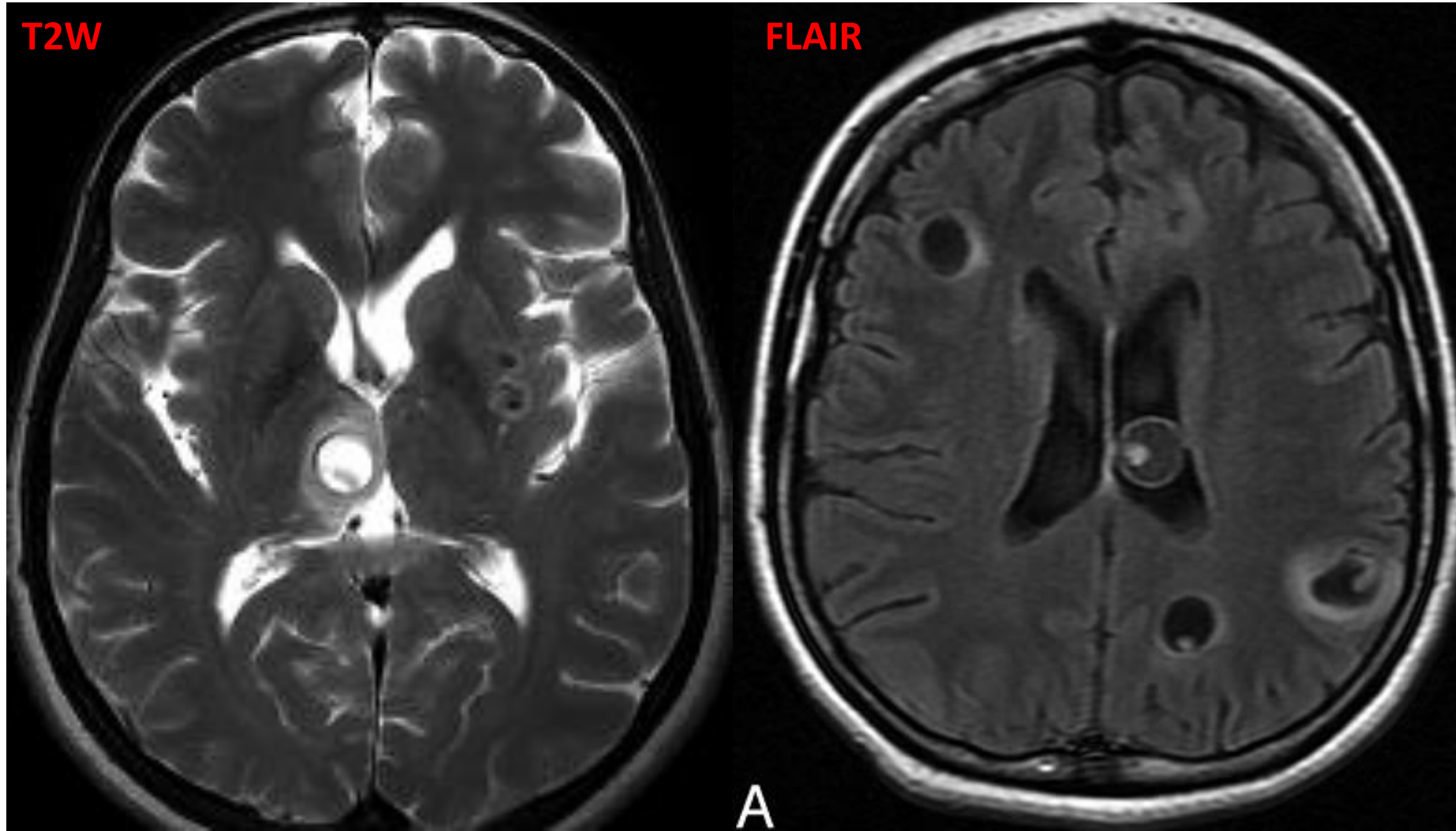
**B** A 36-year-old male presented in emergency department with severe headache, vomiting and left sided weakness. CT head showed right frontal bleed with acute subarachnoid hemorrhage. Patient suddenly deteriorated after few hours of admission and required urgent ventilator support. Urgent CEMRI brain with MR venography was advised. MRI susceptibility-weighted image show a massive right fronto-parietal haemorrhagic infarct with diffuse edema of perilesional cerebral parenchyma with significant mass effect and midline shift. Postcontrast sagittal T1-weighted image show no enhancement of the lesion.

**What is the etiological diagnosis?**



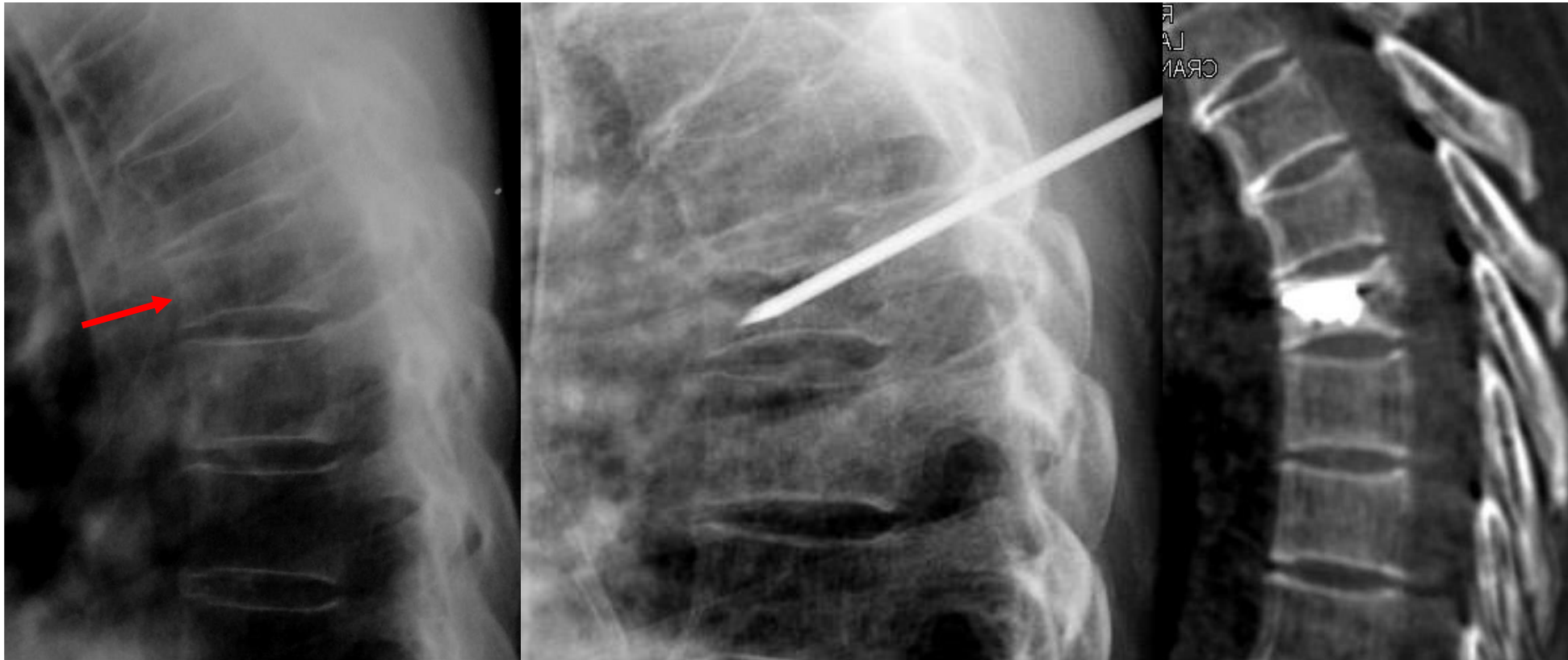
**C** A 48-year-old male presented with left sided focal seizure. CEMRI was done which showed multiple ring enhancing cystic lesion and few calcified lesion in bilateral cerebral hemisphere. Few of the cystic lesion showed eccentric nodule.

**What is the diagnosis?**



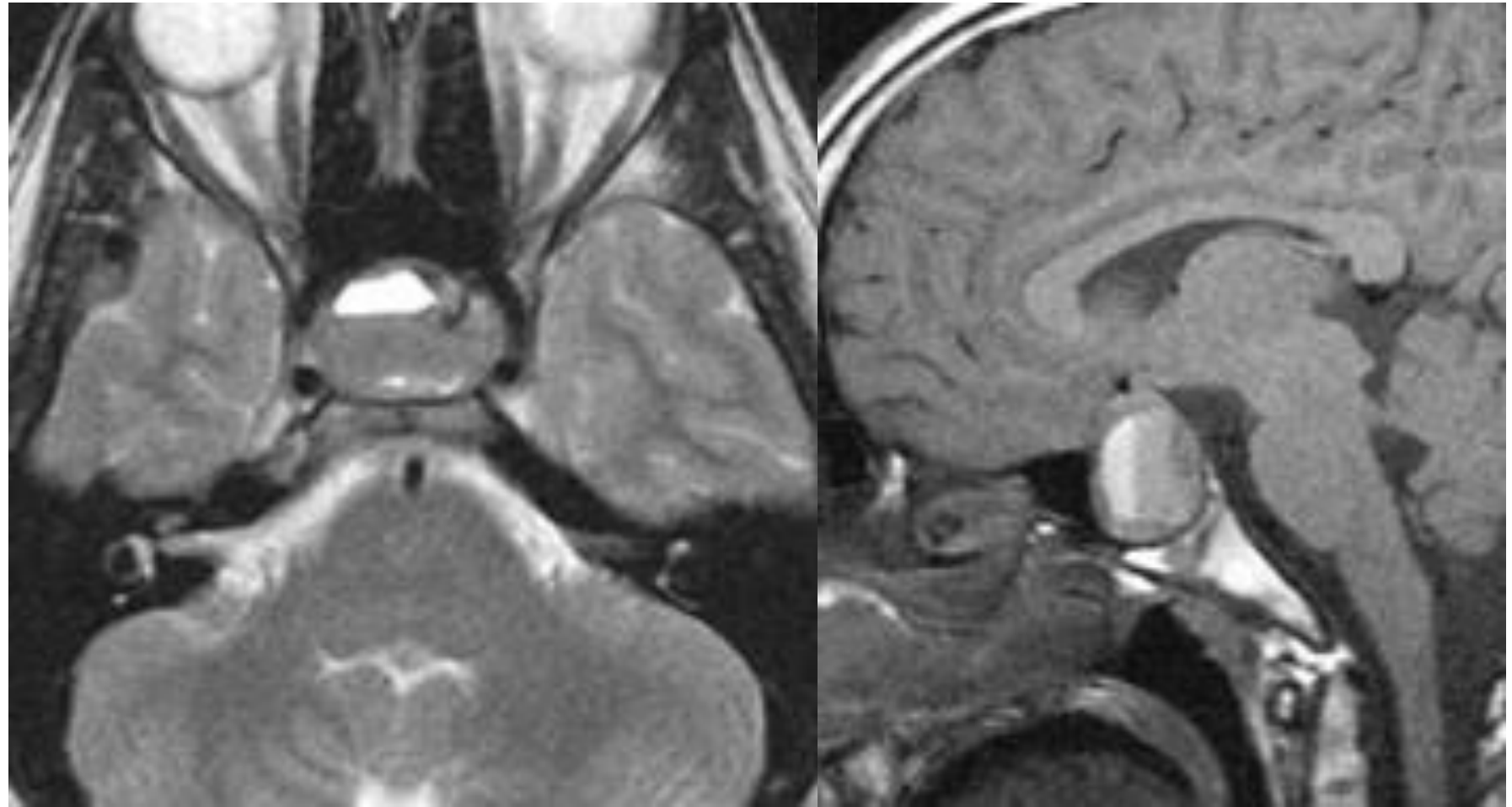
**D** A 55-year-old male presented with excruciating low back pain not relieved by medication. He also had a history of fall from height. Computed tomography demonstrated a D6 fracture without spinal canal compromise. The patient underwent minimal invasive procedure as shown in the figure below.

**What procedure was performed in this patient?**



**E** A 55-year-old female with thrombocytopenia and sudden onset of headache and vision loss. She also had history of chronic headache on and relieved by medications. Plain CT head was performed followed by CEMRI brain.

**Identify the abnormality in the MRI ?**



## Answers

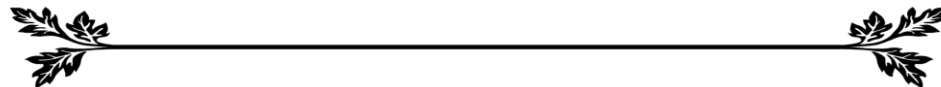
A: Cervical Internal carotid artery dissection with dissecting aneurysm

B: Superior sagittal sinus thrombosis

C: Neurocysticercosis

D: Vertebroplasty

E: Pituitary apoplexy



# Evidence Based Approach to COVID 19

## *Links to some useful articles*



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1. Böger B, Fachi MM, Vilhena RO, Cobre AF, Tonin FS, Pontarolo R. Systematic review with meta-analysis of the accuracy of diagnostic tests for COVID-19. *Am J Infect Control*. 2021 Jan;49(1):21-29. doi: 10.1016/j.ajic.2020.07.011. Epub 2020 Jul 10. PMID: 32659413; PMCID: PMC7350782.

*Authors' Conclusion: RT-PCR remains the gold standard for the diagnosis of COVID-19 in sputum samples. However, the combination of different diagnostic tests is highly recommended to achieve adequate sensitivity and specificity.*

2. Di Toro F, Gjoka M, Di Lorenzo G, De Santo D, De Seta F, Maso G, Risso FM, Romano F, Wiesenfeld U, Levi-D'Ancona R, Ronfani L, Ricci G. Impact of COVID-19 on maternal and neonatal outcomes: a systematic review and meta-analysis. *Clin Microbiol Infect*. 2021 Jan;27(1):36-46. doi: 10.1016/j.cmi.2020.10.007. Epub 2020 Nov 2. PMID: 33148440; PMCID: PMC7605748.

*Authors' Conclusion: Although adverse outcomes such as ICU admission or patient death can occur, the clinical course of COVID-19 in most women is not severe, and the infection does not significantly influence the pregnancy. A high caesarean delivery rate is reported, but there is no clinical evidence supporting this mode of delivery. Indeed, in most cases the disease does not threaten the mother, and vertical transmission has not been clearly demonstrated. Therefore, COVID-19 should not be considered as an indication for elective caesarean section.*



3. Cortegiani A, Ippolito M, Greco M, Granone V, Protti A, Gregoretti C, Giarratano A, Einav S, Cecconi M. Rationale and evidence on the use of tocilizumab in COVID-19: a systematic review. *Pulmonology*. 2021 Jan-Feb;27(1):52-66. doi: 10.1016/j.pulmoe.2020.07.003. Epub 2020 Jul 20. PMID: 32713784; PMCID: PMC7369580.

Authors' Conclusion: **There is insufficient evidence regarding the clinical efficacy and safety of tocilizumab in patients with COVID-19. Its use should be considered experimental, requiring ethical approval and clinical trial oversight.**

4. Cui X, Zhao Z, Zhang T, Guo W, Guo W, Zheng J, Zhang J, Dong C, Na R, Zheng L, Li W, Liu Z, Ma J, Wang J, He S, Xu Y, Si P, Shen Y, Cai C. A systematic review and meta-analysis of children with coronavirus disease 2019 (COVID-19). *J Med Virol*. 2021 Feb;93(2):1057-1069. doi: 10.1002/jmv.26398. Epub 2020 Sep 28. PMID: 32761898; PMCID: PMC7436402.

Authors' Conclusion: **Pediatric patients with COVID-19 may experience milder illness with atypical clinical manifestations and rare lymphopenia. High incidence of critical illness and vomiting symptoms reward attention in children under 1 year old.**

5. Wolff D, Nee S, Hickey NS, Marschollek M. Risk factors for Covid-19 severity and fatality: a structured literature review. *Infection*. 2021 Feb;49(1):15-28. doi: 10.1007/s15010-020-01509-1. Epub 2020 Aug 28. PMID: 32860214; PMCID: PMC7453858.

Authors' Conclusion: **Factors associated with increased risk of severe or fatal disease courses were identified, which include conditions connected with a poor state of health as well as organ damages and coagulation dysfunctions. The results may facilitate upcoming Covid-19 research.**

## About

**Axone** offers recent and relevant information in the neurocritical care field, as well as news within SNCC. **Axone** will be published 3 times a year, January, May and September. Articles fall into several categories such as Speciality wall, Globally yours!, Physiotherapists corner, Neuronursing corner, From the pharmacopeia, Clinical scenarios, Neuroimaging, Trial of trials, Minutes of Meeting and Announcements. If you have any questions or ideas for new articles, please contact Editor **Axone** – Hemanshu Prabhakar, at [prabhakaraiims@yahoo.co.in](mailto:prabhakaraiims@yahoo.co.in)

### Speciality wall!

Articles in this section feature special articles from the various neurocritical care specialities, such as neurointensivists, neuroanesthetists, neurologists, neurosurgeons, neuropathologists and neuroradiologists. Limit the word count to 1500 words and 20 references (Vancouver style)

### Globally yours!

Articles in this section focus on international updates, growth and development of neurocritical care in different countries across the world. Limit the word count to 1000 words and 15 references (Vancouver style)

### Physiotherapists corner, Neuronursing corner, From the Pharmacopeia

Articles in this section include those from physiotherapists, neuronurses, pharmacists or practitioners. Limit the word count to 800 words and 10 references (Vancouver style)

### Clinical scenarios, Neuroimaging

Articles in this section include case reports, correspondences and neuroradiology images. Limit the word count to 800 words and 10 references (Vancouver style). Images may be limited to 6.

### Trial of Trials

Articles published recently in journals will be reviewed and published in this section. Only solicited articles will be accepted in this category.

### Announcements

It includes SNCC member news, CNCC related news, society-related content and the conference calendar.

Articles must be accompanied by passport size photograph and be submitted by 15<sup>th</sup> of the month preceding the release month of **Axone**.

*Send us your entries at:*

[prabhakaraiims@yahoo.co.in](mailto:prabhakaraiims@yahoo.co.in)