

Letters to the Editor

[The Editor is not responsible for the views expressed by the correspondents]

National Doctors' Day-2022 Theme : Is It Appreciating for Past or Preparing for the Future ?

SIR, — When we listen to the word “DOCTOR”, we have this image of one soft, kind person in formal dress with a white apron and stethoscope in hand^{1,2}. Doctors are medical practitioners, physicians or clinicians. In people’s minds, doctors had hospitals and treated the patients. Various specialties other than physicians or surgeons like epidemiologists, pathologists, microbiologists, and radiologists are there, they may/may not be treating the patient in the hospital but they play a very important role in diagnostic and public health maintenance³. As of now, we can say they are the public servants who save human lives using their knowledge of the human body and aid those with permanent physical or psychological impairments. Doctors save human lives not only by treating or healing but also by educating people for the future.

Indian Medical Association (IMA) start celebrating 1st July as National Doctors' Day in 1991 to honour Dr. Bidhan Chandra Roy on his birth and death anniversary for his contribution to the freedom fight and medical education. He was the chief minister of West Bengal from 1948 to till his death (1962)⁴.

Every year IMA and the whole country celebrate 1st July to highlight the contribution of the doctors in humanitarian services and public health. The medical fraternity’s contribution during the current COVID-19 pandemic from 2020 to till now, cannot be described in a few words or sentences. From local medical practitioners to super specialties and research scientists, all contributed to saving human lives by sacrificing their time and family and sometimes by their own lives⁴. IMA celebrates this day with a newer theme every year. This year’s theme is “Family Doctors on Front line” to highlight the support of doctors who are caring for families and communities⁵.

Till today we have faced almost 3 waves of COVID-19 pandemic and now these days, cases are increasing maybe this is the starting of the 4th wave of COVID-19^{6,7}. In the last 3 waves, many private practitioners and family doctors took care of their patients because the government and private hospital doctors were not able to consult and care for all the patients during the pandemic. Other healthcare workers also care but doctors’ roles cannot be forgivable. In 3rd wave, symptomatic patients were treated easily with standard precautions as compared to the previous two pandemics⁶. Other days like mother’s day, women’s day, and children’s day celebration is done with the newer theme along with giving some appreciating specific benefit plans, schemes, or discounts in specific things while only Doctors' day is celebrated giving extra responsibility, instead of any appreciation to doctors.

This year’s theme again accelerates the medical fraternity specifically family doctors, to manage the COVID-19 upcoming cases. Upcoming waves may be easy to handle or worst, no one knows. But this year’s theme is definitely to prepare the doctors for future pandemics, not for appreciating the doctor’s past work.

Doctor’s profession is made only to serve society and humanity and they will accept this responsibility however they have to sacrifice their time, family, or own lives.

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Epilepsy can be Treated by Surgery — Needs Awareness

SIR, — The epilepsies affect children, men and women of all ages, races and ethnic groups. It is the fourth most common neurological disease. Nearly 12 million people with Epilepsy are expected to reside in India; which contributes to nearly one-sixth of the global burden⁸.

Epilepsy can be treated medically and surgically.

Epilepsy surgery must NOT be a LAST RESORT as a treatment option. If a patient being treated by a general physician/paediatrician/neurologist for epilepsy, not responding to medication (DRE—drug resistant epilepsy) and continuing to have seizures impairing the

QOL must be referred for pre-surgical evaluation for determining the cause of intractability and hence a possible surgical treatment.⁽¹⁾

Rationale for Epilepsy Surgery — Clinical experience and scientific data provide some compelling reasons for considering surgery for drug resistant epilepsy. Surgical candidates have a much higher chance of attaining surgical freedom as compared with patients receiving medical treatment for DRE (58 *versus* 8%, respectively^{1,2}.

Unfortunately, in our country, it is said that it is better to live with epilepsy and ruin quality of life rather than having surgery and enjoy a good quality of life.

Epilepsy itself is associated with a mortality of about 0.5% per year (including all causes, eg, sudden unexplained death due to epilepsy, from accidents, etc).

Thus, in a person with epilepsy for 2 years, the risk of surgery roughly equals that of mortality from the epilepsy itself (1%)³. After this, the risk of death from epilepsy becomes more than the surgical treatment.

Pediatric epilepsies should be investigated much earlier as uncontrolled seizures during infancy and early childhood are more likely from symptomatic etiologies.

The delay in identifying surgical candidates leads to severe irreversible changes in the developing brain, consequently to arrested or delayed development⁴, inducing a “catastrophic epilepsy-induced encephalopathy”³.

It has been well demonstrated world over, including in India, that epilepsy surgery is safe and is associated with very low mortality and morbidity.

In summary, epilepsy surgery should not be withheld in well-indicated cases as it offers the patient the best chance to get seizure freedom and should be offered early in the course of the disease (and should not be considered as an option of last resort).

Indications for Epilepsy Surgery¹ — Patients are said to have DRE (drug resistant epilepsy) if they have failed two or more AEDs used in their appropriate, adequate dosage, combinations and in appropriate indications after an adequate duration of treatment (not more than 2 years) in adult patients (16 years and above).

In pediatric patients, diagnosis of DRE should be made much earlier (sometime even within weeks of onset of seizures), particularly if they present with epileptic encephalopathy, infantile spasms, catastrophic onset of epilepsy, seizure frequency of >1 month and disabling seizures

When a patient does not respond to medical treatment and is defined as having Drug Resistant Epilepsy (DRE) as per the criteria mentioned above, he/she should then be investigated for a possibility of epilepsy surgery.

Investigations for Epilepsy Surgery¹ — Before surgery, a careful presurgical evaluation is mandatory. The purpose is to delineate the epileptogenic zone, defined as “the area of cortex indispensable to the generation of epileptic seizures.”

The localization of the “epileptogenic zone” cannot be performed by any single investigation. It has to be localized by multiple investigations, which are of four broad categories:

(1) structural imaging : MRI as per the epilepsy protocol,

(2) electrical localization : EEG, long-term Video-EEG^{5,6}

(3) functional imaging : PET, SPECT, fMRI. [Wada test (an invasive test) is being replaced by fMRI].

(4) the need for invasive investigations—When standard investigations are discordant for substrate-negative pathologies and dual pathologies —

The following are examples of instances that may require invasive intracranial monitoring (Depth, grid and strip electrodes are implanted either through a stereotactic frame or by an open craniotomy)

(a) Seizures are lateralized but not localized (eg, a left-sided, widespread frontal-temporal onset). Seizures are localized but not lateralized (eg, ictal EEG patterns that appear maximally over both temporal lobes).

(b) Seizures are neither localized nor lateralized (eg, stereotyped complex partial seizures with diffuse ictal changes or initial changes obscured by artifact).

(c) Seizure localization is discordant with other data [eg, EEG ictal scalp data discordant with neuroimaging (MRI, PET, SPECT) or neuropsychological data].

(d) Relationship of seizure onset to functional tissue must be determined (eg, seizures with early involvement of language or motor function).

(e) Relationship of seizure onset to lesion must be determined (eg, dual pathology or multiple intracranial lesions).

(f) If seizures are clinically suspected but video-EEG is inadequate for defining them [eg, simple partial seizures with no detectable scalp EEG ictal discharge or suspected epileptic seizures with unusual semiology that suggests psychogenic seizures (pseudo-pseudo seizures)].

(5) Neuropsychological testing⁷

Formal neuropsychological testing is important as a pre-operative baseline, as a predictor of possible cognitive loss with surgery, and as an additional aid for localization. For example, patients with temporal lobe epilepsy tend to have memory deficits. Those with dominant TLE (usually left sided) have more prominent deficits in verbal memory compared with visual memory. Patients with average or above average memory function prior to temporal lobectomy have a higher risk of memory decline, especially with left (dominant) temporal lobectomy.

It is important to establish its relationship of epileptogenic zone with eloquent cortex as the surgery should not result in a new deficit.

The minimum investigations required are specialized MRI sequences, video EEG, documenting a minimum of three concordant and habitual seizures.

In cases where the MRI and video EEG are discordant or there exists a dual pathology, or MRI is negative, advanced investigations like ictal SPECT (with SISCO/SISCOM), PET and invasive video EEG are required.

Functional MRI is required to identify speech, language, motor, memory like areas.

Magnetoencephalography (MEG) is an important tool for source localization.

In summary, presence of a “concordant” epileptogenic focus in a patient with DRE would form an indication for “resective” epilepsy surgery.

If such a focus is not detected, the patient may still be evaluated by advanced techniques.

Patients who have syndromes like Lenox Gestaut syndrome or

intractable disabling seizures without delineation of an epileptogenic zone may be candidates for “palliative” surgery, such as corpus callosotomy, multiple subpial transection or vagal nerve stimulation. Absence of a lesion even on specialized MR images does not exclude that the person will not benefit from epilepsy surgery.

Types of surgical interventions⁷ — The surgical interventions may be broadly divided into — (1) Resection surgery (a)—temporal —Anteromedial temporal lobectomy with amygdalo-hippocampectomy: A surgical procedure where the anterior and the medial part of the temporal lobe resected along with hippocampus, amygdala, uncus and the mesial structures. This is mostly indicated for epilepsies arising from the medial temporal lobe.

Selective amygdalo-hippocampectomy: A more technically demanding surgical procedure where only the mesial structures, like hippocampus, amygdala and uncus, are removed, leaving the lateral temporal lobe intact. Its role over the earlier described procedure is not certain.

(b) Extra-temporal resection surgeries

(2) Disconnection surgery—Corpus callosotomy

Multiple subpial transection: A surgical procedure coming under the category of “palliative” procedure where the aim is to reduce the seizure burden only rather than to eliminate them completely. It is usually performed on an eloquent cortex like the motor cortex so as to avoid producing any deficit. Here, the gyrus is divided into small blocks of 1 × 1 cm using a special instrument.

Hemispherotomy: A complex surgical procedure where the entire affected hemisphere (in conditions like Rasmussen’s syndrome) is disconnected from the opposite hemisphere. This is much less invasive than the procedure, like the earlier hemispherectomy (where the hemisphere is disconnected and then physically removed). The latter procedure has now been given up due to the higher incidence of complications, like blood loss, hemosiderosis, etc.

(3) Neuromodulation — vagal nerve stimulation, anterior thalamic deep brain stimulation

Electrocorticography : — An investigation to determine when different sizes of electrodes (strips, grids) should be placed on the surface of the brain to localize the “epileptogenic” focus before resection in all patients’ neocortical temporal and extra-temporal locations with concordant investigations. It is also to be used in tailored resections in hippocampal sclerosis

Conclusion — Epilepsy surgery should be considered early and liberally whenever anti-epileptic drug fails to control it adequately as mentioned above.

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Laboratory Work and Analysis of the Biochemical components of Human Umbilical Cord Blood and Adult peripheral blood

SIR, — As we previously discussed, “A comparative study of the Biochemical components of Human Umbilical Cord Blood and Adult peripheral blood”(JIMA, July, 2022). Now we have done some laboratory work and analysis of the Biochemical components like TC, DC, ESR, and the IL6.

At first the Informed Consent Form was signed by the patient through which the patient was confirmed to give the umbilical cord blood sample to the student for the betterment of Research and development for humankind.

Then, the sample was collected and stored in EDTA vials.

After that, the cord blood sample was preserved in an Ice pack within a box and quickly transferred to the laboratory for the analysis of biochemical components.

The umbilical cord blood sample was tested for TC, DC, ESR and IL-6

The results are as follows :

Umbilical Cord Blood Sample

Hematological Findings : -

Total Count :

Hemoglobin is 15.1 gm/dl

RBC count is 4.63 million/cumm

WBC count is 15530/cumm

Platelet count is 277000/cumm

Differential Count:

Neutrophils are 90%

Lymphocytes are 43%

Monocytes are 3%

Eosinophils are 4%

Basophils are nil

Pack cell volume (PCV) is 48.3%

Mid cell volume (MCV) is 110 fl
 Mean corpuscular hemoglobin concentration (MCHC) is 31.2%
 Red cell distribution width (RCDW) is 18%
 Erythrocyte Sedimentation rate (ESR) is 12mm/hr.
 General Blood Picture - WB-EDTA
 RBC – MILD MACROCYTOSIS
 WBC – NO ABNORMAL CELL SEEN
 Platelet – MORE THAN ADEQUATE

*The sample is rich in hemoglobin i.e. 15.1 gm/dl

*The White blood cell(WBC) count is 15530/cumm, much higher than the normal range.

*By the differential count we get to know that the amount of lymphocyte i.e. 43% and PCV, MCV and MCHC are slightly different from the normal range.

Immunological Findings: - Immunoassay:IL-6 is 3.21 pg/ml

*The sample is tested for Interleukin-6 (IL-6) immunoassay.

*The result of this immunoassay IL-6 is found to be 3.21 pg/ml which is much less than the inflammatory range.

*Hence it acts as an anti-inflammatory cytokine.

It is a well-known fact that Cord blood is a pregnancy specific biological substance. We enumerated the clinical, biochemical and other parameters of cord blood.

Now, we compare the peripheral blood of the same patient i.e. the mother.

The adult peripheral blood sample was also tested for TC, DC, ESR and IL-6.

The results are as follows:

Adult Peripheral Blood Sample

Hematological Findings:

Total Count:

Hemoglobin is 9.3 gm/dl

RBC count is 4.39 million/cumm

WBC count is 12000/cumm

Platelet count is 1,93,000/cumm

Differential Count:

Neutrophils are 51%

Lymphocytes are 07%

Monocytes are 2%

Eosinophils are nil

Basophils are nil

Pack cell volume (PCV) is 30.5%

Mid cell volume (MCV) is 65.9 fl

Mean corpuscular hemoglobin concentration (MCHC) is 30.5%

Red cell distribution width (RCDW) is 16%

Erythrocyte Sedimentation rate (ESR) is 10mm/hr.

General Blood Picture - WB-EDTA

RBC – NO ABNORMAL CELL SEEN

WBC – NO ABNORMAL CELL SEEN

Platelet – Adequate

*The hemoglobin level of the sample is very low i.e. 9.3 gm/dl

*White blood cell(WBC) count is 11000/cumm, in the normal range.

*By the differential count we get to know that the amount of lymphocyte i.e. 7% and PCV, MCV and MCHC are in the normal range.

Immunological Findings: -

Immunoassay : IL-6 is 3.78 pg/ml

*The sample is tested for Interleukin-6 (IL-6) immunoassay.

*The result of this immunoassay IL-6 is found to be 3.78 pg/ml which is much less than the inflammatory range.

*Hence it acts as an anti-inflammatory cytokine.

By comparing the two blood samples we have finally reached a discussion that.

I. Cord blood is enriched with fetal hemoglobin i.e. present in great quantities.

II. The number of Red blood cells (RBC) present in cord blood is higher than the adult blood.

III. The number of White blood cells (WBC) present in cord blood is a massive amount which indicates that it is immunologically very much beneficial for use to cure a large number of diseases.

IV. The number of platelets also present in cord blood in large figures.

V. It is also enriched with anti-inflammatory cytokines and growth factors to serve as a repair and regeneration type pregnancy specific biological substance.

So, we conclude that Cord Blood is a pregnancy specific biological substance which is free from contamination and has an immense potential to be the true blood substitute. Maybe our future lies within it. It should be served for the betterment of mankind in the upcoming years through the world.

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