



SLIMS,PONDICHERRY



Date: 20.08.2021

From

DR.R.CHIDHAMBARAM ,
Professor and Head,
Dept.of radio-diagnosis and Imaging Sciences ,
SLIMS,PONDICHERRY
Bharath Institute of Higher Education and Research,
Chennai.

To

The Dean,
SLIMS
Bharath Institute of Higher Education and Research,
Chennai.

Sub: Permission to conduct value-added course:

INTEGRATED PHYSIOLOGY TEACHING -NEUROPHYSIOLOGY

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: **INTEGRATED PHYSIOLOGY TEACHING -NEUROPHYSIOLOGY** on 1.12.2021 . We solicit your kind permission for the same.

Kind Regards

DR.R.CHIDHAMBARAM

FOR THE USE OF DEANS OFFICE

Names of Committee members for evaluating the course:

The Dean: Dr. Jayalakshmi
The HOD: Dr. R. Chidhambaram.
The Expert: Dr. T. Jothi bharani.

The committee has discussed about the course and is approved.

Dean

(Sign & Seal)

DEAN

Subject Expert

(Sign & Seal)

HOD

(Sign & Seal)

SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES
OSUDU, AGARAM VILLAGE,
KODAPAKKAM POST,
PUDUCHERRY - 605 502

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DEPARTMENT OF RADIOLOGY,
SRI LAKSHMINARAYANA
INSTITUTE OF MEDICAL SCIENCE
PUDUCHERRY - 605 002.

DEPARTMENT OF RADIOLOGY,
SRI LAKSHMINARAYANA
INSTITUTE OF MEDICAL SCIENCE
PUDUCHERRY - 605 002.

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Course Proposal

Course Title: INTEGRATED PHYSIOLOGY TEACHING - NEUROPHYSIOLOGY

Course Objective: TO DEMONSTRATE PHYSIOLOGY TEACHING - NEUROPHYSIOLOGY

Course Outcome: BETTER UNDERSTANDING OF PHYSIOLOGY TEACHING -NEUROPHYSIOLOGY.

Course Audience: ANY MEDICAL STUDENT

Course Coordinator: PROF.DR.R.CHIDHAMBARAM

Course Faculties with Qualification and Designation:

1. DR.R.CHIDHAMBARAM,MBBS,MDRD.PROF. AND HOD
2. DR.SRHRNIVASAN,MBBS,DNB,ASSOCIATE PROFESSOR
3. DR.JYOTI BASU,MBBS,DNB,SENIOR RESIDENT

Course Curriculum/Topics with schedule (Min of 30 hours)-ENCLOSED

SINo	Date	Topic	Time	Hours
1	01-12-2021	intro	2:00 PM	2 hours
2	02-12-2021	Anatomy-1	2:00 PM	2 hours
3	03-12-2021	Physiology-1	2:00 PM	2 hours
4	04-12-2021	Anatomy-2	2:00 PM	2 hours
5	05-12-2021	Physiology-2	2:00 PM	2 hours
6	06-12-2021	Anatomy-3	2:00 PM	2 hours
7	07-12-2021	Physiology-3	2:00 PM	2 hours
8	08-12-2021	HEMIPLEGIA-1	2:00 PM	2 hours
9	09-12-2021	HEMIPLEGIA-2	2:00 PM	2 hours
10	10-12-2021	HEMIPLEGIA-3	2:00 PM	2 hours
11	11-12-2021	HEMIPLEGIA-4	2:00 PM	2 hours
12	12-12-2021	HEMIPLEGIA-5	2:00 PM	2 hours
13	13-12-2021	HEMIPLEGIA-6	2:00 PM	2 hours
14	14-12-2021	ETIOLOGY	2:00 PM	2 hours
15	15-12-2021	RECAP	2:00 PM	2 hours
			Total Hours	30

REFERENCE BOOKS: (Minimum 2)

- 1.RUMACK
- 2.WHO PALMER

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OFFICE OF THE DEAN

Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,
PUDUCHERRY - 605 502.

[Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME (P -II) dt. 11/07/2011]
[Affiliated to Bharath University, Chennai - TN]

Circular

20.11.2021

**Sub: Organising Value-added Course: INTEGRATED PHYSIOLOGY TEACHING -
NEUROPHYSIOLOGY. reg**

With reference to the above mentioned subject, it is to bring to your notice that Sri LakshmiNarayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research** is organizing “**INTEGRATED PHYSIOLOGY TEACHING - NEUROPHYSIOLOGY**”. The course content and registration form is enclosed below.”

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before NOV 2021 Applications received after the mentioned date shall not be entertained under any circumstances.

Encl: Copy of Course content

Dean

DEAN

SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES
OSUDU, AGARAM VILLAGE,
KODAPAKKAM POST,
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VALUE ADDED COURSE

1. Name of the programme & Code :

**Integrated physiology teaching- case based study in neurophysiology
RAD 04**

2. Duration & Period

30 hrs & 2021

3. Information Brochure and Course Content of Value Added Courses

Enclosed as Annexure- I

4. List of students enrolled

Enclosed as Annexure- II

5. Assessment procedures:

Multiple choice questions- *Enclosed as Annexure- III*

6. Certificate model

Enclosed as Annexure- IV

7. No. of times offered during the same year:

2021

8. Year of discontinuation: 2021

9. Summary report of each program year-wise

Value Added Course- 2021					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	RAD 04-1	Integrated physiology teaching- case based study in neurophysiology	Dr. Jothibas	MBBS	30 2021
2	RAD 04-2	Integrated physiology teaching- case based study in neurophysiology	Dr. Srinivasan	MBBS	30 2021

10. Course Feed Back

Enclosed as Annexure- V


RESOURCE PERSON


COORDINATOR

DEPARTMENT OF RADIOLOGY,
SRI LAKSHMINARAYANA
INSTITUTE OF MEDICAL SCIENCE
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PUDUCHERRY - 605 002.

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Annexure- II

VALUE ADDED COURSE
TOPIC:- CASE BASED STUDY in Neurophysiology.

List of Students Enrolled 2021

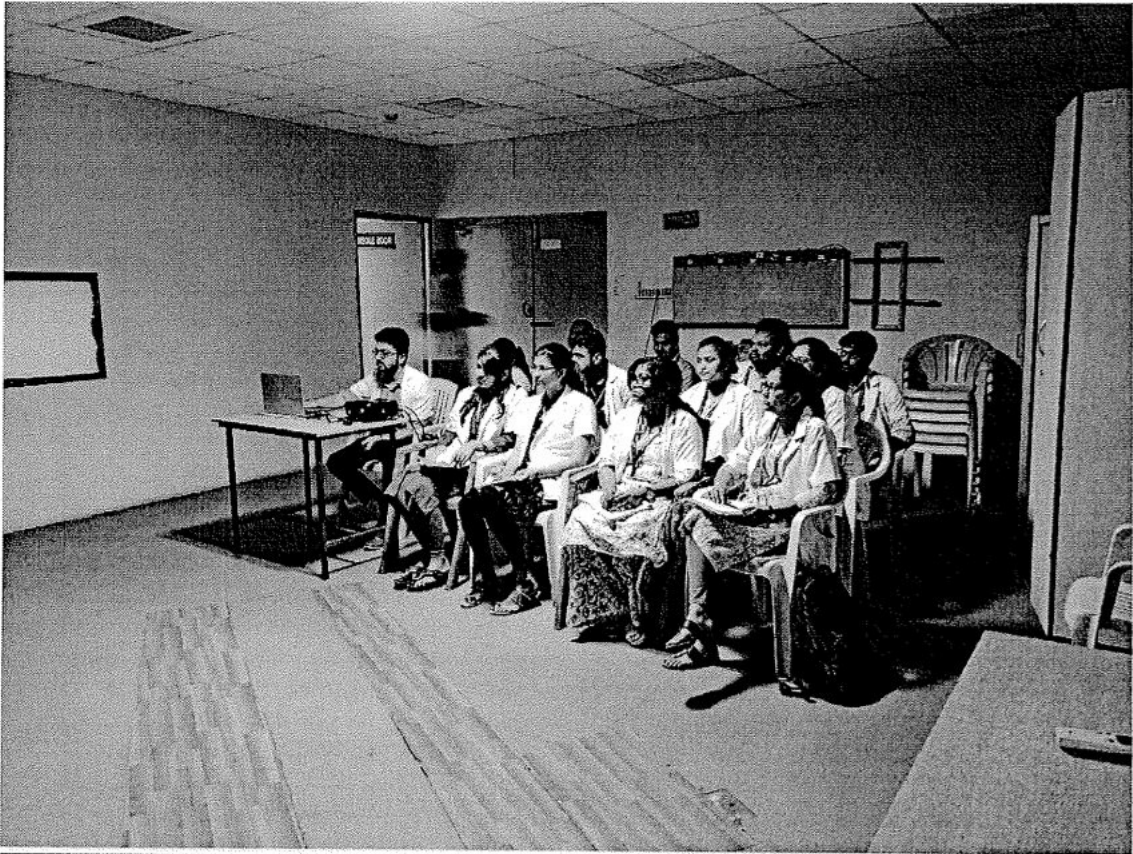
1ST YEAR MBBS STUDENTS			
Sl.NO.	NAME OF THE STUDENT	UNIVERSITY REG. NO.	signature
1	KAVITHA .M	U16MB311	Kavitha
2	KAVIYA .K	U16MB312	Kaviya
3	KEERTHANA .K	U16MB313	Keerthana
4	KEERTHI K DAS	U16MB314	Keerthi
5	KUNCHAL BALA VENKATA RAMANA RED	U16MB315	Kunchal
6	LAKSHMIPURAM VEDA SREEVIDYA	U16MB316	Lakshmi
7	LOGESH BABU J.S	U16MB317	Logesh
8	LOKESHWARAN .M	U16MB318	Lokeshwaran
9	MADHUMITHA .R	U16MB319	Madhumitha
10	MADHUMITHA .S	U16MB320	Madhumitha
11	MANIMAARANE .R	U16MB321	Manimaarane
12	MATHIVAANANE .R	U16MB322	Mathivaanane
13	MATHIVANAN J	U16MB323	Mathivanan
14	MD ALTAF KHAN	U16MB324	MD Altaf Khan
15	MEKALA CHARAN CHOWDARY	U16MB325	Mekala Charan
16	MERLINS	U16MB326	Merlins
17	MERLINE SHEEBA .B	U16MB327	Merline Sheeba
18	MOHAN .B	U16MB328	Mohan
19	MOHIT BHARDWAJ	U16MB329	Mohit
20	MONISH PALEI PATRA	U16MB330	Monish
21	MONISHA .S	U16MB331	Monisha
22	MONISHA .M	U16MB332	Monisha
23	MONISHDEVI .N	U16MB333	Monishadevi
24	MOUNIKA .A	U16MB334	Mounika
25	MOUNIKA.B	U16MB335	Mounika
26	MUHAMMAD SHEBIN	U16MB336	Muhammad Shebin
27	MUSKAAN SHAMIM	U16MB337	Muskaan
28	MUSULURI SHYAM SINDHU	U16MB338	Musuluri Shyam
29	NAMITA YADAV	U16MB339	Namita
30	NAMRATA GHORAI	U16MB340	Namrata

RESOURCE PERSON

[Signature]

COORDINATOR

[Signature]



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Student Feedback Form

Course Name: INTEGRATED PHYSIOLOGY TEACHING- CASE BASED STUDY IN NEUROPHYSIOLOGY
 Subject Code: VAC 4

Name of Student: BIHER BIHERA-20 Roll No: 01600204

We are constantly looking to improve our courses and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance.

Sl. No	Particulars	1	2	3	4	5
1	Objectives of the course is clear					✓
2	Course contents met with your requirements				✓	
3	Existent resources was well planned					✓
4	Exercises were done and easy to understand					✓
5	Teaching aids were effective					✓
6	Instructors encourage interaction and were helpful				✓	
7	The level of the course				✓	
8	Overall rating of the course			1	2	3

*Rating: 1-Excellent 4-Excellent 3-Good 2-Satisfactory 1-Absatisfactory

Suggestion if any:

very good

Date:

Handwritten signature

Student Feedback Form

Course Name: INTEGRATED PHYSIOLOGY TEACHING- CASE BASED STUDY IN NEUROPHYSIOLOGY
 Subject Code: VAC 4

Name of Student: SLIMS SLIMS-0 Roll No: 01600205

We are constantly looking to improve our courses and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance.

Sl. No	Particulars	1	2	3	4	5
1	Objectives of the course is clear					✓
2	Course contents met with your requirements					✓
3	Existent resources was well planned				✓	
4	Exercises were done and easy to understand					✓
5	Teaching aids were effective					✓
6	Instructors encourage interaction and were helpful				✓	
7	The level of the course				✓	
8	Overall rating of the course			1	2	3

*Rating: 1-Excellent 4-Excellent 3-Good 2-Satisfactory 1-Absatisfactory

Suggestion if any:

Good

Date:

Handwritten signature

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D. The pelvic girdle muscles.

E. The axial muscles.

5. The rubrospinal tract originates where?

A- Nucleus accumbens.

B- Oculomotor nucleus.

C- Substantia nigra

D- Dentate nucleus.

E- Red nucleus.

6. In a patient with right internuclear ophthalmoplegia:

A- The lesion is in the right MLF.

B- The convergence is abnormal.

C- There is right adduction deficit.

D- Left abductor nystagmus.

E- The saccadic movement of left eye is normal.

7. The following are true about the CSF circulation:

A- Is produced by the modified ependymal cells of the choroid plexus.

B- The ventricular system communicates with the subarachnoid space through the roof of the third ventricle.

C- Is absorbed mainly through the arachnoid granulations in the superior sagittal sinus.

D- The arachnoid granulation is in contact with the endothelium of the venous sinus.

E- Blockage of the arachnoid granulation causes communicating hydrocephalus.

8. Which is Broca's area?

A- 42

B- 22

C- 1

D- 44

E- 12

9. Which is not formed by Telencephalon?

A- Frontal lobe

B-Temporal lobe

C-Occipital lobe

D-Cerebellum

E-Parietal lobe

10. Ulnar nerve is formed by the anterior roots of the spinal nerves:

A-C2-C3

B-C4-C5

C-C5-C8

D-C8-T1

E-T1-T2

11. Regarding innervation of selected muscle of the upper limb, the followings are true Except:

A-Deltoid – C5.

B-Extensor carpi radialis longus – C6 C7.

C-Flexor carpi radialis – C6C7.

D-Extensor digitorum – C8

E-Flexor carpi ulnaris – C8.

12. Regarding the superficial abdominal reflex, the following are true EXCEPT:

A-It depend on the integrity of T8-T12.

B-May be absent in patient with upper motor neuron lesion affecting the same side.

C-Segmental loss may be related to disease of the abdominal wall.

D-It absent in elderly.

E-Bilateral absent response is usually significant.

13. Muscle fatigue is due to:

A- Inability of the action potential to spread over the muscle.

B- Failure of transmission in the motor nerve.

C- Failure of neuro-muscular transmission.

D- Depletion of energy store

E-None of the above

14. In the examination of the pupils, All the following are true Except:

- A- Normal pupils are typically 3-4 mm in diameter.
- B- Thalamic pupils slightly large about 5-7 mm.
- C- Fixed dilated pupils greater than 7 mm in diameter.
- D- Fixed midsized pupils is approximately 5mm in diameter.
- E- Pinpoint pupils is 1-1.5 mm in diameter.

15. A 22-year-old woman suffering from bilateral weakness of her lower limbs. Which of the following represent the most likely location of this lesion?

- A- A lesion rostral to the pyramidal decussation.
- B- The left genu of internal capsule.
- C- The right posterior limb of internal capsule.
- D- A lesion caudal to the pyramidal decussation.
- E- The right genu of internal capsule.

16. Meralgia parasthetica is due to compression of:

- A- Lateral cutaneous N.
- B- Median N.
- C- Radial N.
- D- Axillary N.
- E- Sural N.

17. Which of the following cranial nerve has the longest intracranial course?

- A- Facial n.
- B- Oculomotor n.
- C- Abducens n.
- D- Trochlear n.
- E- Vagus n.

18. The presence of lasague sign suggest damage to the:

- A- Spinal root L2-L3
- B- Spinal root C5-C8 or radial nerve
- C- Spinal root L5-S1 or sciatic nerve

02.01.2022

From

Dr.R.Chidhambaram
Professor and Head,
Department of Radiology and imaging sciences,
Sri Lakshmi Narayana Institute of Medical Sciences
Bharath Institute of Higher Education and Research,
Chennai.

Through Proper channel

To

The Dean,
Sri Lakshmi Narayana Institute of Medical Sciences
Bharath Institute of Higher Education and Research,
Chennai.

Sub: Completion of value-added course: : **INTEGRATED PHYSIOLOGY TEACHING -
NEUROPHYSIOLOGY**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: : **INTEGRATED PHYSIOLOGY TEACHING -NEUROPHYSIOLOGY**: for 20 medical students (batch 2) .

We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards,

Dr.R.Chidhambaram.



Encl: Certificates

Photographs

DEPARTMENT OF RADIOLOGY,
SRI LAKSHMINARAYANA
INSTITUTE OF MEDICAL SCIENCE
PUDUCHERRY - 605 002.

CASE –BASED TEACHING OFNEURO-PHYSIOLOGY FOR PRECLINICAL STUDENT

Introduction

Medical and health care-related education is currently changing. Medical schools have realized the importance of including clinical work early and have termed the mixing of basic and clinical sciences as *vertical integration* (1).Case-based learning is a relatively new method of teaching basic sciences in medical colleges. In india this method is yet to become routine in undergraduate teaching.Still majority of medical colleges follow the routine didactic lectures.The aim of our study is to compare the effectiveness of conventional didactic lecture (CM) and case-based teaching method (CBL) for teaching neuro-physiology for preclinical medical students in our medical college.Thebasic science knowledge learned in the context of a clinical case is actually better comprehended and more easily applied by medical students than basic science knowledge learned in isolation (2).

The Neurophysiology pathway.

The major motor system in the brain that controls movement of all four limbs in the human beings is the cortico-spinal tract, commonly called as pyramidal tract. Hemiplegia is the most common neurological disease that affects elderly. Hemiplegia is mostly due to ischemia involving the pyramidal tract. The pyramidal tract, after its origin from the Betz cells in the cerebral cortex, course through various areas in the brain like corona radiata, internal capsule, midbrain, pons and medulla oblongata. The lesion in each of these areas produces different types of hemiplegia and different clinical presentation. For eg. lesion in the internal capsule produces what is called as classical capsular hemiplegia and lesion in midbrain produces crossed hemiplegia in which there is hemiplegia on one side and cranial nerve paralysis on the other side. Thus by carefully studying these cases in clinical practice, we can identify the site of lesion and the level of pyramidal tract involvement. Thus there is a significant clinico-physiological correlation. This may help student in learning the applied aspect of the lesions in pyramidal tract. Such case-based learning at the early stage in the medical college, makes the student become better clinicians.

BASIC PHYSIOLOGY OF PYRAMIDAL TRACT.

A programme of movement formulated by the premotor cortex is converted into a series of signals in the motor cortex that are transmitted to the spinal cord in the pyramidal tract. This passes through the internal capsule and the ventral brainstem before decussating in the medulla to enter the lateral columns of the spinal cord. The pyramidal tract 'upper motor neurons' synapse with the anterior horn cells of the spinal cord grey matter, which form the lower motor neurons. These upper motor neurone in the pyramidal tract controls the opposite of the body, especially posture, muscle power, tone, contraction, coordination etc. Lesions affecting the upper motor neurone result in increased muscle tone, exaggerated reflexes, etc.-resulting the classical hemiplegia (paralysis of one half of the body) in the opposite side of the body. Hemiplegia in common parlance is known as stroke. It is an medical emergency condition.

Patient number	Clinical presentation	Brain lesion pyramidal tract level
Case 1	left side hemiplegia	Right motor cortex
Case 2	right side hemiplegia	Left corona radiata
Case 3	right side hemiplegia	Left internal capsule- posterior limb
Case 4	Left side hemiplegia and Right cranial nerve palsy.	brain stem -midbrain level- right side.
Case 5	Right side hemiplegia and Left cranial nerve palsy	brain stem –pons level- left side
Case 6	left hemiplegia and Sympathetic ganglia involvement	brain stem –medulla oblongata level- right side.

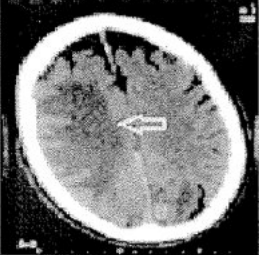

Conventionally, teaching of undergraduate medical students is done with the help of didactic lectures, practicals, a tutorial, and clinics, which are mostly used as passive teaching and learning methods; however, they lack in the development of problem-solving or reasoning skills of the students. The results of our study indicate that the knowledge of students is significantly improved by this new teaching method (CBL) (3). The Students' satisfaction and

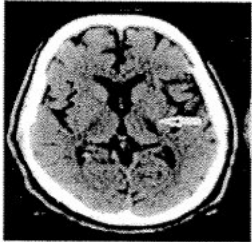
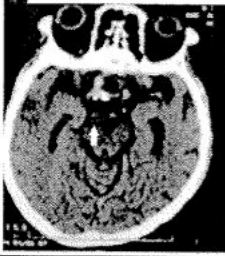
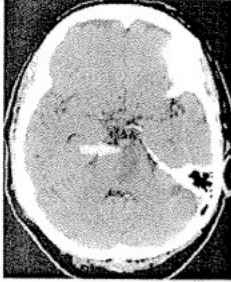
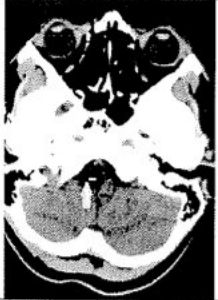
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examination performance were better in this study. The students enjoyed case-based teaching and considered that their clinical reasoning, diagnostic interpretation and ability to think logically were improved. The results of our study show that most undergraduate students preferred such interactive case-based discussions to traditional lectures in learning physiology. The initiative not only integrated physiology with related basic sciences and clinical medicine but importantly linked students' developing knowledge of theory to practice. (4). Although traditional lectures convey factual information well, they are not well suited to higher levels of learning, such as critical thinking, analysis and problem-solving, which must be learnt by doing. The individual teacher's qualities play a crucial role in the learning experience.

BRAIN CT IMAGES SHOWING PYRAMIDAL TRACT LESIONS

Case no.	CT SCAN BRAIN section level .	Actual Brain CT scan images	Level of lesion in the pyramidal tract
1	Cerebral cortex		Right cerebral motor cortex-yellow arrow. Patient had left side cortical hemiplegia
2	Corona radiata		Left corona radiata-yellow arrow Patient had right side hemiplegia

3	Internal capsule		<p>Left side internal capsule-posterior limb- yellow arrow Patient had right side classical hemiplegia</p>
4	Brain stem Mid-brain		<p>Right cerebral peduncle-yellow arrow Patient had crossed hemiplegia Hemiplegia + III cranial n.palsy</p>
5	Brain stem pons		<p>Left side pontine lesion -- yellow arrow Patient had crossed hemiplegia Hemiplegia + VII cranial n.palsy</p>
6	Brain stem medulla oblongata		<p>Right side medullary lesion- yellow arrow Patient had hemiplegia + Horner's syndrome</p>

References.

- 1.Susan F. McLean,case-based learning and its application in medical and health-care fields: a review of worldwide literature;J MedEducCurricDev 2016-Jan-Dec; 3

2. Abraham R, Ramnarayan K, Kamath A. Validating the effectiveness of clinically oriented physiology teaching (COPT) in undergraduate physiology curriculum. BMC Med Educ 2008

3. Farrukh Majeed, Effectiveness of case-based teaching of physiology for nursing Students, Journal of Taibah University Medical Sciences (2014) 9(4), 289-292

4. Hudson JN, Buckley P. An evaluation of case-based teaching: evidence for continuing benefit and realization of aims. Adv Physiol Educ 2004; 28: 15e22.

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