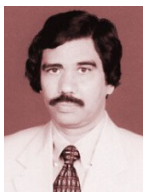

Highlights of Dr. Sunil Pradhan's biodata:

Administrative experience:

1. Medical Superintendent, Institute of Human Behaviour & allied Sciences, Dilshan Garden, Delhi.
2. Head of the Department of Neurology, Institute of Human Behaviour & allied Sciences, Dilshan Garden, Delhi.
3. Head of the Department of Neurology, Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow.

Total experience as faculty in Neurology: 33 years

National awards:

1. Padma Shri – from President of India
2. Shanti Swaroop award – from Prime Minister of India
3. ICMR awards – three times – one of them from Prime Minister of India
4. Awarded Fellowships by two National Science Academies (FAMS, FNASc)
5. Awarded DSc (Honaris causa) by Rani Durgavati University, Jabalpur.

International Awards:

1. Fellow of Royal College of Physicians (awarded honaris causa by Edinburgh University, UK)
2. Vocational excellence award – Rotary International.
3. Pride of India award – International friendship forum.

State level awards:

1. Vigyan Gaurav – highest award of Science & Technology, Government of UP
2. Vigyan Ratna – second highest award of Science & Technology, Government of UP
3. UP Ratna award
4. Gomati Gaurav Samman

Scientific research:

1. Two new discoveries are adopted internationally by his name as:
   a) Pradhan Sign in Duchenne Muscular Dystrophy.
   b) Pradhan's Method of Intercostal Nerve conduction studies.
2. Discovered 5 new clinical signs in muscular dystrophy – all are internationally acclaimed
3. Given a new physiotherapy technique for stroke patients
4. Discovered the presence of a disease described from Japan (Hirayama disease) in Indian patients and gave diagnostic criteria on MRI which are adopted now world over.
5. Worked on different aspects on diseases prevalent in India such as Cysticercosis (tape worm), tuberculosis of brain, Japanese encephalitis and Leptospirosis.
6. Described two new rare Epilepsies in Indian patients.

Recent felicitations of Dr. Sunil Pradhan by the Governor of Uttar Pradesh Honarable Shri Ram Naik Ji

1. Gomati Gaurav Samman – Gomati Utsav, Lucknow, 2015
2. Seva Bhushan Samman – for Vishist Chikitsa Seva, Seva Bharti, Awadh Prant at Atal Behari Bajpai Auditorium, KGMU, Lucknow. 2016
3. Icons of health – 2016, Organized by Times of India Group, 10th April, 2016, felicitation with a plaque by Governor of Uttar Pradesh Honarable Shri Ram Naik Ji
4. Swayam Siddha Award as Jury Member for Empowerment of Women – Anupama Foundation, Lucknow, 14th July, 2018
5. Distinguished Alumni Award, Lucknow University, Lucknow, on Foundation Day ceremony, 25th Nov, 2018

6.Awarded D.Sc by the Hemwati Nandan Bahuguna Uttarakhand Medical Education University, Dehradun in 2020.

Dr. Sunil Pradhan Bio-data (Curriculum Vitae

Name:	**Dr. Sunil Pradhan**, MD(Med), DM(Neuro), FAMS, FNASc, FICP, FRCP (Edin), DSc (Hon) Recipient of "Padma Shri" from the President of India Recipient of "SS Bhatnagar award"and ''ICMR" awards from the Prime Minister of India
Father's Name:	Late Sri Om Prakash Pradhan
Age (Date of birth):	61 years (25th June, 1957)
Place of Birth:	Najibabad, Bijnor, Uttar Pradesh, India
Marital status:	Married
Designation:	Professor& Head of Neurology
Nationality:	Indian
Address:	
(a) Official:	Professor& Head, Department of Neurology Sanjay Gandhi Postgraduate Institute of Medical Sciences, Raebareli Road, Lucknow 226014, India Mob.: +91-8004904628; Phone: +91-522- 2494170; Fax.: +91-522-2668017
(b) Residential:	House no.1, Type-5-A, Residential Complex, Sanjay Gandhi Postgraduate Institute of Medical Sciences, Raebareli Road, Lucknow 226014, India Mob.: +91-9415410723; Phone: +91-522- 2494171

Specialization:

(a) Subject of work: Clinical Medicine

(b) Field of Specialization: Neurology

(c) Areas of Research:

(i) Neuromuscular diseases
(ii) Clinical Neurophysiology
(iii) Epilepsy
(iv) Infectious and parainfectious diseases of the nervous system

Academic qualifications by Examination

Examination	Board / University	Year
High School	High School & Intermediate Board, U.P.	1971
Intermediate	High School & Intermediate Board, U.P.	1973

MBBS (Lucknow)	King George's Medical College Lucknow University, Lucknow	1979
MD (Medicine)	King George's Medical College Lucknow University, Lucknow	1983
DM (Neurology)	King George's Medical College Lucknow University, Lucknow	1986

Honorary academic qualifications in the form of Fellowships / Memberships

1. Fellow of Royal College of Physicians (FRCP), Edinburgh -- 2014
2. Member of American Academy of Neurology -- 2015
3. Member of the New York Academy of Sciences, New York, 1997.
4. Fellow of National Academy of Medical Sciences (FAMS) -- 2006
5. Fellow of National Academy of Sciences (FNASc) -- 2003
6. Fellow of Indian College of Physicians (FICP) -- 2004

Experience (Details of employment and service record after post-graduation)

S.N.	Period	Place of employment	Designation
1.	Feb 84-May 84	Gandhi Memo. & Assoc. Hospitals, Lucknow.	Chief Resident (Medicine)
2.	Sept 84-Sept 86	King George's Med. College and G.M. & A. Hospitals, Lucknow.	Full time PG Std / Senior Resident (Neurology)
3.	Feb 87-Aug 87	Jaslok Hospital and Research Centre, Mumbai.	Senior Registrar (Neurology)
4.	Aug 87-Sept 87	Jaslok Hospital and Research Centre, Mumbai.	Resident in Clin. Neurophysiology
5.	Oct 87-Aug 88	National Institute of Mental Health & Neurosciences, Bangalore	CSIR Scientist Pool Officer (Neurology)
6.	Aug 88-Feb 89	Nizam's Institute of Med. Sciences, Hyderabad	Assistant Professor (Neurology)
7.	Feb 89-Sept 92	Sanjay Gandhi Postgrad. Inst. Med. Sci., Lucknow	Assistant Professor (Neurology)
8.	Sept 92-Jun 97	Sanjay Gandhi Postgrad. Inst. Med. Sci., Lucknow	Associate Professor (Neurology)
9.	Jul 97- Jun 2004	Sanjay Gandhi Postgrad. Inst. Med. Sci., Lucknow	Additional Professor (Neurology)
10.	Jul 2004 –Sep 2007	Sanjay Gandhi Postgrad. Inst. Med. Sci., Lucknow	Professor (Neurology)
11.	Sep 2007-April 09	Institute of Human Behaviour & Allied Sciences, Delhi	Professor & Head Dept. of Neurology & Med. Superintendent

12.	April 09- April 2017	Sanjay Gandhi Postgrad. Inst. Med. Sci., Lucknow	Professor (Neurology)
13.	April 2017- till now	Sanjay Gandhi Postgrad. Inst. Med. Sci., Lucknow	Professor & Head (Neurology)

Research Projects completed

1. A clinical trial of Centpiperalone on maturity onset diabetic patients. **Pradhan S**, Tandon OP, Mukherjee SK (1981-1983).
2. A clinical study of stroke patterns in Uttar Pradesh. **Pradhan S**, Nag D, Kar AM, Shukla R, Misra UK (1984-1986).
3. Clinical, electrophysiological, histochemical and genetic studies in Duchenne muscular dystrophy. **Pradhan S**, Mittal B (1990-1992).
4. Clinical, electrophysiological and cytochemical studies in patients of mitochondrial cytopathies. **Pradhan S**, Mittal B, Mittal RD (1993-1995).
5. Role of ultrasound in the diagnosis of neuromuscular diseases. Hasan A, Gujral R, Baijal S, **Pradhan S** (1996-1998).
6. Prospective evaluation of magnetization transfer MR imaging in the diagnosis of infectious meningitis. Kamra P, Gupta RK, **Pradhan S**, Prasad KN, Kathuria MK (1999-2001).
7. Outcome of single CT enhancing lesions with special reference to optimisation of duration of antiepileptic therapy. Kumar M, Govil YC, **Pradhan S**, Garg RK, Kumar S, Agnihotri A (2001-2003).
8. Role of Compylobacter jejuni in Guillain Barre' Syndrome. Prasad KN, **Pradhan S**, Ayyagari A (2001-3).
9. Assay of mono amine oxidase-B activity in platelets of patients with primary headache disorders. Singh HO, Singh MM, Maheshwari PK, **Pradhan S**, Agarwal AK, Khanna VK, Pursnani ML, Singh JB (2002-5).
10. Outcome of single CT enhancing lesions with special reference to optimisation of duration of antiepileptic therapy. Kumar M, Govil YC, **Pradhan S**, Garg RK, Kumar S, Agnihotri A (2001-2005).
11. Role of Compylobacter jejuni in Guillain Barre' Syndrome. Prasad KN, **Pradhan S**, Ayyagari A (2001-6).
12. Assay of mono amine oxidase-B activity in platelets of patients with primary headache disorders. Singh HO, Singh MM, Maheshwari PK, **Pradhan S**, Agarwal AK, Khanna VK, Pursnani ML, Singh JB (2002-5).
13. A pilot study of **epidemiological correlates of dementia** in rural areas around Lucknow. The project sanctioned by Council of Science & Technology (U.P.) in 2007-2008.
14. Characterization of neuromuscular disorders (**muscular dystrophies** / myopathies) by **NMR** (nuclear magnetic resonance) spectroscopy. Synopsis submitted for the partial fulfillment of Ph.D. by Niraj Kumar Srivastava at Sanjay Gandhi PGI of Medical Sciences, Lucknow – 2004 –2009.
15. Study of **gene polymorphism** and mutations in **Alzheimer's disease** and other dementias in a North Indian Cohort. Thesis submitted for the fulfillment of Ph.D. by Miss Pratima Pandey at DDU Gorakhpur University, Gorakhpur – 2005 – 2010.
16. Project titled "A phase III, double-blind, placebo-controlled study to determine the efficacy and safety of a low (50 mg/day) and high (100 mg/day) dose of **Safinamide**, as add-on therapy, in patients with idiopathic Parkinson's disease with motor fluctuations, treated with a stable dose of levodopa and who may be receiving concomitant treatment with stable doses of dopamine agonist and/or an anticholinergic agent. A project sponsored by Clinirix India Ltd., Gurgaon. N. Delhi – 2008 –2010.

Editor / Associate Editor of Scientific journals

1. Associate Editor of **Neurology India**, a journal of the Neurological Society of India, 2009-till now.

Peer Reviewer of articles in Journals

1. Elsevier Editorial System & Science Direct
2. The Lancet
3. Epilepsia
4. European Journal of Neurology
5. Acta Neurologica Scandinevica

6. Clinical Neurology and Neurosurgery (CNN)
7. Journal of the Neurological Sciences
8. Neurology India / Annals of Indian Academy of Neurology
9. Indian Journal of Medical Research (IJMR)

National Achievements

1. National Awards:

Award	Awarding Agency	Year
1. Shanti Swaroop Bhatnagar Prize(Medical Sciences)	Council of Scientific and Industrial Research, New	2002
2. Vigyan Gaurav Award	Council of Science & Technology, Uttar Pradesh	2011
3. Amrut Mody Unichem Award	Indian Council of Medical Research, New Delhi	2007
4. Dr. H. B. Dingley Memorial Award	Indian Council of Medical Research, New Delhi	1994
5. Shakuntala Amirchand Memorial Award	Indian Council of Medical Research, New Delhi	1996
6. Vigyan Ratna Samman	Council of Science & Technology, Uttar Pradesh	2004
7. Rajib Goyal Prize for Young Scientist (Life Sciences)	Kurukshetra University Goyal Prize Academy Kurukshetra	2002
8. Bharat Excellence Award	Friendship Forum of India	2008
9. UP Ratna Award	Govt. of Uttar Pradesh	2018
10. Gomati Gaurav Award	Gomati festival of Lucknow	2016
11. Swayam Siddha Award	Swayam Siddha Society for Women Empowerment, Lucknow	2018

2. Other national level awards / special attainments:

1. **Best poster award** of Indian Academy of Neurology, 1993.
2. **Dr. S. T. Achar Award** of the Indian Academy of Pediatrics, (as co-author), 1995.
3. **Dr. S. T. Achar Award** of the Indian Academy of Pediatrics, (as co-author), 1996.
4. **Maj. Gen. Amir Chand Award** of Armed Forces Med. College, (as co-author), 1998.
5. **Best paper award** of Indian College of Radiology, (as co-author), 1999.
6. Delivered **Dr. Kapil Sood Oration** at 14th UP Neurocon, Meerut, 2005.
7. Delivered **Dr. Dhamija Oration** at 9th ann. meeting, Delhi Neurol. Assoc., AIIMS, N.D. 2009.
8. Delivered **Dr. Dhamija Oration** at 18th ann. meeting, Delhi Neurol. Assoc., India Habitat Cen. N.D. 2018.
9. Felicitated by the Indian Medical Association **(IMA)**, Lucknow, 2004 and 2018
10. Felicitated by Aashiyana Parivaar, Lucknow, 2003.
11. Felicitated by Raebareli Development Authority, Raebareli, 2004.

12. Felicitated by Hanuman Mandir Society, Aliganj, Lucknow, 2007.
13. Felicitated by the **Arogya Bharti Sanstha**, Lucknow, 2017
14. Felicitated by the Swayam Siddha Society for Women Empowerment, Lucknow, 2018

3. <u>Examiner/Expert in academic examinations & selection committees</u>:

1. **Member** of the Interview Board (Advisor), Combined Civil Services Examination (IAS, IPS, IRS etc), **Union Public Service Commission**, New Delhi, 2012
2. **Member** of the expert committee for interviewing SRF/RA (Medical & Pharmaceutical Sciences) at **CSIR (HRD group)**, New Delhi, 2004 to 2010.
3. **Member** of the expert committee, Combined Medical Examination for Central Medical Services, **Union Public Service Commission**, New Delhi, 2006 and 2012
4. **External Examiner for DM (Neurology/Pediatric Neurology)** final exam at:
   a) King George's Medical University, Lucknow, 2001-2007 & 2010-2011.
   b) G. B. Pant Hospital, New Delhi, 2008-2010.
   c) All India Institute of Medical Sciences, New Delhi, 2010 - cont.
   d) Nizam's Institute of Medical Sciences, Hyderabad, 2011-2012.
   e) The Bangur Institute of Neurological Sciences, Kolkata, 2011-2012.
   f) Institute of Medical Sciences, BHU, Varanasi, 2012.
5. **Internal Examiner for DM (Neurology)** final examination at Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow (intermittently for last 10 yrs.).
6. **Guide for PhD on Medical Subjects:** Registered as to undertake PhD program at Kanpur University, Kanpur, 2006 onwards.
7. **Examiner for MBBS** final examination (Medicine) at King George Medical Univ., Lucknow, 2005.
8. **Member of the selection committee** for combined DM Entrance examination of Uttar Pradesh held at GSVM Medical College, Kanpur, 1997.
9. **Member of the selection committee** for the selection of lecturers in Neurology under Rajasthan Public Service Commission, 2001.
10. **Member of the selection committee** for the selection of lecturers in Neurology at Banaras Hindu University, Varanasi, 2006.
11. **Member** of the expert committee, for the selection of Assistant Professor in Neurology at Central Government Institutes, **Union Public Service Commission**, New Delhi, 2008.
12. **Member** of the expert committee for the selection of SS Bhatnagar awardee (Medical Sciences category) at Council of Scientific and Industrial Research, **CSIR (HRD group)**, New Delhi, 2016.
13. **Member** of the expert committee for the marketing of new drugs in Neurology, Directorate of Drug Controller of India, New Delhi, 2017.
14. **Member** of the expert committee for the evaluation of research projects at all the ICMR centers of the country,Indian Council of Medical Research **(ICMR)**, New Delhi, December, 2018.

International Achievements

1. Awards:

1. Rotary International: Vocational Excellence Prize, 2002.
2. Pride of India Award: Indo-US Friends Association, 2007.

2. International Fellowships & Memberships:

1. Fellowship on "Neuromuscular Diseases" under Japan International cooperation Agency, Tokyo to work at Nagoya University, Nagoya, Japan, 1991-1992.
2. Member of the New York Academy of Sciences, New York, 1997.
3. Fellow of Royal College of Physicians (FRCP), Edinburgh -- 2014
4. Member of American Academy of Neurology -- 2015

3. Inclusion in International Biographies:

1. Biographee – Marquis Who's Who in the World, 15th-19th Editions, USA, 1997 – 2003 & 2008.
2. Biographee – International directory of distinguished leadership (American Biographical Institute, USA), 2003.
3. Biographee – Marquis Who's Who in Science & Engineering, 7th edition, 2003-4.
4. Biographee – Marquis Who's Who in Asia, 1st edition, 2007.
5. Biographee – Asia Pacific Who's Who (Vol. VII), Rifacimento International - 2007.
6. Biographee – Asian Admirable Achievers (Vol. I), Rifacimento International – pp. 399, 2007.

4. International Traveling Fellowships:

1. Travelling fellowship of World Federation of Clinical Neurophysiology, Florence, Italy, 1997.
2. Travelling fellowship of Merion Society of Muscle Diseases, Oxford, UK, 1999. (Invited to speak on "New clinical sign in Duchenne muscular dystrophy")
3. Travelling fellowship of Merion Society of Muscle Diseases, Oxford, UK, 2002.(Invited to speak on 'Polyhill sign' in Facioscapulohumeral dystrophy).
4. Travelling fellowship - 7th Japanese Neuro-infectious Disease Congress, Tokyo, Japan. (invited to speak on "Recent progress in Japanese encephalitis in India" on 4th and 5th Oct. 2002).
5. Travelling fellowship – 5th Asian & Oceanian Epilepsy Congress, Bangkok, Thialand, 2004

5.Invited Guest Lectures delivered at International platform:

1. Invited to deliver lecture on "Valley sign in Duchenne muscular dystrophy" at Oxford Muscle symposium, Marion Society of Muscle Dis. Oxford, UK. (1999).
2. Invited to deliver lecture on "Poly-hill sign in facioscapulohumeral dystrophy" at Oxford Muscle symposium, Marion Society of Muscle Diseases, Oxford, UK. (2002).
3. Invited to deliver lecture on "Recent progress in Japanese encephalitis in India" in 7th Japanese Neuro-infectious disease congress at Tokyo Women's Medical University, Tokyo, Japan (2002).
4. Invited to deliver lecture on "Virology of Japanese encephalitis – emerging & re-emerging pattern" at Department of Microbiology, Tokyo Metropolitan City Hospital, Tokyo Women's Medical University, Tokyo, Japan (2002).
5. Invited to deliver lecture on "Neurocysticercosis and other Infective causes of Epilepsy" in the session "Prevention of Epilepsy" at 5th Asian and Oceanian Epilepsy Congress, Bangkok, Thailand, 28th – 31st August 2004.

6. Overseas visits

S No	From	To	Institute / city and the country of visit	Purpose of visit
1.	16 - 09 - 90	22 - 09 - 90	Munich, Germany	To present a research paper in 7th International Congress of Neuro-muscular Diseases
2.	24 - 11 - 91	06 - 01 - 92	Tokyo International Training Centre, Japan	To learn Japanese language
3.	07 - 01 - 92	29 - 06 - 92	Nagoya University Nagoya, Japan	To get training in Neurology/ Neuromuscular Diseases Under Japan Internatl. Co-op. Agency, JICA Program
4.	24 - 08 - 97	30 - 08 - 97	Florence, Italy	To present a paper in 14th International Congress of EEG and Clinical Neurophysiology
5.	01 - 09 - 97	02 - 09 - 97	Rome, Italy	To present a paper in a satellite conference on Clinical Neurophysiology in Neuro-rehabilitation
6.	14 - 09 - 97	19 - 09 - 97	Buenos Aires, Argentina	To present 3 papers in 16th World Congress of Neurology
7.	08 - 07 - 99	10 - 07 - 99	Oxford, U.K.	To present a paper on New Clinical Sign in DMD at Marion Society meeting on muscle diseases.
8.	02-03-2001	15-13-2001	Cleveland, USA	To attend a workshop on Clinical Neuro-physiology and Deep Brain Stimulation
9.	28-06-2002	29-06-2002	Oxford, U.K.	To present a paper poly-hill sign in FSHD at Marion Society meeting on muscle diseases.
10.	04-10-2002	05-10-2002	Tokyo, Japan,	To speak on Recent progress in Japanese encephalitis in India at 7th Japanese Neuro-infectious Disease Congress
11.	28-05-2004	05-06-2004	Vienna, Austria	To present paper on "Effect of healing patterns on long-term seizure outcome in patients with neurocysticercosis".
12.	27-08-2004	02-09-2004	Bangkok, Thailand	To deliver invited guest lecture on " Neurocys-ticercosis & other infection related epilepsy".
13.	03-11-2005	13-11-2005	Sydney, Australia	To present papers at 18th World Congress of Neurology on Japanese encephalitis, Juvenile myoclonic epilepsy, haemorrhagic stroke and dementia with Lewy Body.
14.	27-01-2008	29-01-2008	Budapest, Hungary	To attend a meeting on clinical drug trial on Multiple sclerosis
15.	29-09-2008	04-10-2008	Hong Kong, China	To attend a meeting on clinical drug trial on Parkinson's Disease (Safinamide)
16.	27-11-2008	01-11-2008	Dubai, UAE	To attend a meeting on clinical drug trial on analgesic drug Ralfinamide.

Complete list of publications

[1] Original research papers (Asterisk* indicates corresponding author)

1. Goel R, Manglik A, **Pradhan S**. Role of co-trifamol in the treatment of chloremphenicol resistant and other cases of enteric fever - a comparative study. Ind Med Gaz 1986; 120 (3): 81-83.
2. Manglik A, Goel R, **Pradhan S**. Clinical efficacy trial of nalidixic acid vs co-trimoxazole in urinary tract infection. Ind Med Gaz 1986; 120 (4): 130-132.
3. Manglik A, Ghatak A, **Pradhan S**. Efficacy and safety of Piroxicam, a new NSAID, in rheumatoid arthritis. Ind Med Gaz 1987; 121 (9): 302-304.
4. Manglik A, Ghatak A, **Pradhan S**. Clinical efficacy of rhumalya in rheumatoid arthritis. Probe 1987; 4: (Oct-Dec) 21-24.
5. Ghatak A, Manglik A, **Pradhan S**. Efficacy trial of diclofenac sodium -- a new NSAID in rheumatoid arthritis. The Indian Practitioner 1988; (Oct): 743-748.
6. Kar A M, Mittal P, **Pradhan S**. Cerebrospinal fluid fistula following a lumbar puncture. Brit Med J 1987; 295: 528.
7. Agarwal A, Nag D, Kar AM, **Pradhan S**. Post viral acute cerebellar ataxia (letter). J Assoc Physicians India 1987; 35.
8. **Pradhan S***, Manglik A, Ghatak A. A comparative study of antihypertensive effect of nifedipine retard and metoprolol. Ind Med Gaz 1987; 121 (6): 217-219.
9. **Pradhan S***, Nag D, Kar AM, Misra UK. Role of computed tomography in stroke in the Indian context. J Assoc Physicians India 1988; 36: 428-430.
10. **Pradhan S***, Taly A. Intercostal nerve conduction study in man. J Neurol Neurosurg Psychiatry 1989; 52: 763-766.
11. Taly A, **Pradhan S**, Subbakrishna DK, Nagaraja D. Sural sensory conduction study: comparison between the needle and the surface recording electrodes. Neurology India 1990; 38: 343-346.
12. Misra UK, Pandey BN, **Pradhan S**, Bal S, Mittal A, Bhatia E. Malignant insulinoma presen-ting as recurrent episodic loss of consciousness. J Assoc Physicians India 1991; 39: 771-773.
13. Sinha S, **Pradhan S**, Mittal RD, Mittal B. Detection of gene deletion in patients of Duchenne muscular dystrophy/Becker muscular dystrophy using polymerase chain reaction. Indian J Med Res (B) 1992; 96: 297-301.
14. **Pradhan S***. Focal sheathing of retinal arteries in tuberous sclerosis. Pediatr Neurosurg 1991-92; 17: 279-280.
15. **Pradhan S***. Tibialis anterior R-1 response: standardisation of technique, normative data and clinical utility in L4-L5 radiculopathy. Electroencephalogr Clin Neurophysiol 1993; 89: 10-21.
16. **Pradhan S***, Kalita J. Micturition induced reflex epilepsy. Neurology India 1993; 41: 221-223.
17. **Pradhan S***. New clinical sign in Duchenne muscular dystrophy. Pediatr Neurol 1994; 11: 298-300.
18. **Pradhan S***, Singh MN, Mathur VN, Phadke RV. Pontine and extra-pontine myelinolysis presenting with acute parkinsonism during recovery. Neurology India 1994; 42: 163-167.
19. **Pradhan S***, Mittal B. Infraspinatus muscle hypertrophy and axillary folds' wasting as the important signs in Duchenne muscular dystrophy. Clin Neurol Neurosurg 1995; 97: 134-138.
20. **Pradhan S***, Jha R, Singh MN, Gupta S, Phadke RV, Kher V. Central pontine myelinolysis following "slow" correction of hyponatremia. Clinical Neurol Neurosurg 1995; 97: 340-343.
21. **Pradhan S***, Gupta A. Iaterogenic median and femoral neuropathy. J Assoc Physicians India 1995; 43: 141.
22. **Pradhan S***, Kalita J. Tickling seizures. Neurology India 1996; 44: 27-29.
23. **Pradhan S***. F-response multiplicity in lower motor neuron disorders. Electromyogr Clin Neurophysiol 1996; 36: 441-448.
24. **Pradhan S***, Pandey N, Phadke RV, Kaur A, Sharma K, Gupta RK. Selective involvement of basal ganglia and occipital cortex in acute endosulfan poisoning. J Neurol Sci 1997; 147: 209-213.
25. **Pradhan S***, Ghosh D, Kumar S. Leigh's disease: analysis of clinical and imaging characteristics with possible therapeutic implications. Neurology India 1997; 45: 177-181.
26. **Pradhan S***, Gupta RK. Magnetic resonance imaging in juvenile asymmatric segmental spinal muscular atrophy. J Neurol Sci 1997; 146: 133-138.

27. **Pradhan S***, Gupta RK, Ghosh D. Parainfectious myelitis: three clinico-imagiological patterns with prognostic implications. Acta Neurol Scand 1997; 95: 241-247.
28. Ghosh D, **Pradhan S**. Ante-mortem diagnosis of Leigh's disease: role of magnetic resonance studies. Indian J Pediatr 1997: 683-691.
29. Mittal B, Singh V, Misra S, Sinha S, Mittal RD, Chaturvedi LS, Danda S, **Pradhan S**, Agarwal SS. Genotype-phenotype correlation in Duchenne/Becker muscular dystrophy patients seen at Lucknow. Indian J Medical Res 1997; 105: 32-38.
30. Singh V, Sinha S, Misra S, Chaturvedi LS, **Pradhan S**, Mittal RD, Mittal B. Proportion and pattern of dystrophin gene deletions in North Indian Duchenne and Becker muscular dystrophy patients. Hum Genet 1997; 99: 206-208.
31. Phadke SR, Pahi J, Phadke RV, **Pradhan S**, Agarwal SS. Importance of etiologic diagnosis of hydrocephalus as illustrated by a case of Walker Warburg Syndrome. Indian Pediatrics 1997; 34: 1037-1038.
32. **Pradhan S***, Singh MN, Pandey N. Kluver Bucy syndrome in young children. Clin Neurol Neurosurg 1998; 100: 254-258.
33. Ghosh D, **Pradhan S**. Extensor toe sign by various methods in spastic children with cerebral palsy. J Child Neurol 1998; 13: 216-220.
34. **Pradhan S***. Time dependent selective recurrent discharge of motor units in F-response. Electroencephalogr Clin Neurophysiol 1998; 109: 341-349.
35. Kathuria MK, Gupta RK, Roy R, Gaur V, Husain N, **Pradhan S**. Measurement of magnetization transfer in different stages of neurocysticercosis. JMRI 1998; 8: 473-479.
36. **Pradhan S***, Gupta RK, Kapoor R, Shashank S, Kathuria MK. Parainfectious conus myelitis. J Neurol Sci 1998; 161: 156-162.
37. **Pradhan S***, Pandey N. Acute disseminated encephalomyelitis presenting as ataxic hemiparesis. Neurology India 1998; 46: 156-158.
38. **Pradhan S***, Gupta RP, Shashank S, Pandey N. Intravenous immunoglobulin therapy in acute disseminated encephalomyelitis. J Neurol Sci 1999; 165: 56-61.
39. Gupta R, Kathuria MK, **Pradhan S**. Magnetization transfer MR imaging in central nervous system tuberculosis. Am J Neuroradiol 1999; 20: 867-875.
40. Gupta R, Kathuria MK, **Pradhan S**. Magnetization transfer magnetic resonance imaging demonstration of perilesional gliosis – relation with epilepsy in treated and healed neurocysticercosis. The Lancet 1999; 354 (July 3): 44-45.
41. **Pradhan S***, Pandey N, Shashank S, Gupta RK, Mathur A. Parkinsonism due to predominant involvement of substantia nigra in Japanese encephalitis. Neurology 1999; 53: 1781-1786.
42. **Pradhan S***, Kathuria MK, Gupta RK. Perilesional gliosis and seizure outcome: a study based on magnetization transfer magnetic resonance imaging in patients with neurocysticercosis. Annals of Neurology 2000; 48 (2): 181-187.
43. Ogata A, Matsumura T, **Pradhan S***. Parkinsonism due to predominant involvement of substantia nigra in Japanese encephalitis [letter]. Neurology 2000; 55: 602.
44. **Pradhan S***, Gupta RK, Singh MB, Mathur A. Biphasic illness pattern due to early relapse in Japanese-B virus encephalitis. J Neurol Sci 2001; 183: 13-18.
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7. **Pradhan S**. Intra-operative electrophysiological monitoring during surgery at cranio-vertebral junction. In: Jain VK, Behari S, eds., Cranio-vertebral junction anomalies - the Indian experience. Lucknow: Sanjay Gandhi PGI of Medical Sciences, 1997: 31-34.
8. **Pradhan S**. Muscle disorders with special reference to pseudomuscular hypertrophy. In: Kapoor R, ed., Pediatric Neurology Update. Kanpur: Indian Academy of Pediatrics (Kanpur chapter), 1997: 41-51.
9. Gupta RK, Kathuria MK, Pandey R, Dev R, Hussain M, **Pradhan S**, Malhotra H Magnetization transfer MR in CNS tuberculosis, Fifth scientific meeting, Internat. Soc. for MR in Med., Vancouver, B.C., Canada, 1997: April 12-18.
10. Mamta B Singh, **Pradhan S**. Approach to a case with proximal muscle weakness. XIth Prof. N. N. Gupta Oration and Neurology Update, 1999: 129-146.
11. **Pradhan S**. Metabolic myopathy. XVIth Prof. N. N. Gupta Oration and Neurology Update, 2004: 129-146.
12. **Pradhan S**, Yadav RK. Scenario of epilepsy in the developing countries. CME book – 14th UP Neurocon, Meerut. 2005: 23-31.
13. Pandey P, **Pradhan S** and Mittal B. ApoE and PS1 gene polymorphisms in Alzheimer's disease and other dementias in regional North Indian population " proceedings of All India Cell Biology Conference, ITRC, Lucknow, 2005.

[4] Chapters contributed to books:

1. **Pradhan S** and Gupta RK. Parainfectious and other infectious diseases. Gupta RK, Lufkin J, eds., MR Imaging and Spectroscopy of central nervous system infection. New York: Kluwer Academy / Planum Publishers, 2001: 273-296.
2. **Pradhan S**. Muscular dystrophy: the Indian perspective. In: Garg RK, ed., Reviews in Tropical Neurology. Lucknow: Shivam Arts, 2002: 213-225.
3. **Pradhan S**, Wadia NH. Disorders of muscle (Myopathies). In: Wadia NH, ed., Neurological practice: an Indian perspective. New Delhi: Elsevier, 2005: 612-636.
4. Wadia NH and **Pradhan S**. Peripheral neuropathies. In: Wadia NH, ed., Neurological practice: an Indian perspective. New Delhi: Elsevier, 2005: 591-611.
5. Pradhan S, Mani VE. Muscular dystrophy. In: Mukherjee A, bhattacharya K, Singh G. IAN Textbook of Neurology. The Health Sciences Publisher, New Delhi, 2018, pp 642-653.
6. Pradhan S, Meena AK. Congenital Muscular Dystrophy. In: Gupta P, Mennon PSN, Ramji S, Lodha R. PG Text Book of Pediatrics, 2nd Adition, J P Brothers Medical Publishers, New Delhi, 2018: pp 2628-2639.

[5] Abstracts published in international journals

Research abstracts published in international journals / presented in international conferences:

1. **Pradhan S** (1990) Electrical assesment of respiratory dysfunction in Guillian Barre syndrome. J Neurol Sci 98 (suppl): 343. **(Presented at 7th International Congress of Neuro-muscular Diseases, Munich, Germany)**
2. Sinha S, Misra KP, **Pradhan S**, Mittal B, Agarwal SS (1993) Preferential gene deletion at the central hot spot in Indian BMD patients. Am J Hum Genet 53: 1758.
3. Pradhan S, Gupta RK, Jain VK, Pandey R (1994) MR imaging in Juvenile asymmetric segmental spinal muscular atrophy. Neurology Update – 1st International conference on ODNS, November 19-22, 14d.1.
4. **Pradhan S** (1996) F-response multiplicity in lower motor neurone disorders. Electroencephalogr Clin Neurophysiol 97: S 173.
5. **Pradhan S**, Gupta RK, Rana PVS (1997) Magnetic resonance imaging in wasted leg syndrome. J Neurol Sci 150 (suppl): S 140. **(Presented at 16th World Congress of Neurology, Buenos Aires, Argentina).**
6. **Pradhan S** (1997) A morphometric study of the influence of motor unit recurrence pattern on various F-response parameters. J Neurol Sci 150 (suppl): S 299.**(Presented at 16th World Congress of Neurology, Buenos Aires, Argentina).**
7. **Pradhan S** (1997) Importance of new clinical sign in DMD patients with inconspicuous calf hypertrophy. J Neurol Sci 150 (suppl): S 52.**(Presented at 16th World Congress of Neurology, Buenos Aires, Argentina).**
8. **Pradhan S** (1997) Intercostal nerve somatosensory evoked potentials - a new technique for the localisation of spinal cord lesions. Electroencephalogr Clin Neuro-physiol 103: S 142. **(Presented at 14th International Congress of EEG and Clinical Neurophysiology,Florence, Italy).**
9. **Pradhan S** (2000) Normotensive state during acute phase of hypertensive intracerebral haemorrhage., Stroke 31: 2883.**(Presented at 16th World Congress of Neurology, Sydney, Australia, 2005)**
10. **Pradhan S**, Gupta RK (2001) Pathogenesis of perilesional gliosis in neurocysticercosis. J Neurol Sci 187 (suppl-1): S 410..**(Presented at 16th World Congress of Neurology, Sydney, Australia, 2005)**
11. **Pradhan S**, Kumar R, Gupta RK (2001) Minor epileptic symptoms in patients with perilesional gliosis secondary to neurocysticercosis. J Neurol Sci 187 (suppl -1): S 415.
12. Kumar N, **Pradhan S** (2003) Electroencephalographic observations in Juvenile Myoclonic Epilepsy. Muscle & Nerve 12 (suppl): S 98.
13. **Pradhan S** (2003) Clinical utility of multiple F-response. Muscle & Nerve 12 (suppl): S 107.
14. **Pradhan S** (2003) Intercostal nerve conduction in Guillain Barre' Syanrome. Muscle & Nerve 12 (suppl): S 108.
15. **Pradhan S**, Yadav RK. Seizures and epilepsy in central nervous system infection. Neurology Asia 2004; 9 (suppl 1): 4-9.
16. **Pradhan S** (2005) Diagnostic approach to a patient with proximal muscle weakness. Current trends in neuromuscular diseases – an international symposium, New Delhi, 5-7 March 2005: pp 49.
17. **Pradhan S** (2005) Metabolic myopathy. Current trends in neuromuscular diseases – an international symposium, New Delhi, 5-7 March 2005: pp 50.
18. **Pradhan S**. Neurocysticercosis and infective causes of epilepsy. (**Presented at 5th Asian and Oceanian Epilepsy Congress, Bangkok 2004: pp 2.)**
19. **Pradhan S**. Clobazam in the treatment of Juvenile Myoclonic Epilepsy. J Neurol Sci 2005; 238 (Suppl): S141..**(Presented at 18th World Congress of Neurology, Sydney, Australia, 2005)**

20. **Pradhan S**. Role of perilesional gliosis in the pathogenesis of secondary epilepsy due to infections and trauma. J Neurol Sci 2005; 238 (Suppl): S141.**(Presented at 18th World Congress of Neurology, Sydney, Australia, 2005)**
21. **Pradhan S**. Recurrent episodic central demyelinating disease with myelo-optic predilection. J Neurol Sci 2005; 238 (Suppl): S241.**(Presented at 18th World Congress of Neurology, Sydney, Australia, 2005)**
22. **Pradhan S**. Evolution of clinical features in Dementia with Lewy-body during long-term follow-up. J Neurol Sci 2005; 238 (Suppl): S298..**(Presented at 18th World Congress of Neurology, Sydney, Australia, 2005)**
23. **Pradhan S**. Patterns of blood pressure during acute phase of hypertensive intracerebral hemorrhage. J Neurol Sci 2005; 238 (Suppl): S431.**(Presented at 18th World Congress of Neurology, Sydney, Australia, 2005)**
24. **Pradhan S**. Progress in Japanese Encephalitis in India. J Neurol Sci 2005; 238 (Suppl): S472. **(Presented at 18th World Congress of Neurology, Sydney, Australia, 2005)**

List of activities in the public field i.e., health education in community, policy formulation, continuing medical education programs etc.

Organized medical camps and delivered guest lectures to medical and general community; some important ones are listed below:

1. Delivered a lecture on "diagnosis and management of low back pain" in the CME program of Indian Medical Association (Lucknow chapter) on 20th May, 1990.
2. Invited to talk on "recent advances in myasthenia gravis" in the CME program at Command Hospitals, Lucknow on 28th Feb. 1993.
3. Delivered lecture on "recent advances on the diagnosis and management of epilepsy", at the refresher course of Indian Medical Association - College of General Practitioners (sub-faculty Kanpur), which was widely covered by most of the regional daily newspapers.
4. Talked about the management of epilepsy in a CME program of Shahjahanpur Medical Association at Shahjahanpur, UP in Dec. 1994.
5. Invited for a question-answer session on neurological diseases at IFFCO general hospital, Jagdishpur, UP in Jan. 1995.
6. Invited to talk on diagnosis and management of spastic children with or without mental retardation during the silver jubilee annual day celebration (18th Feb. 1995) at Swami Vivekanand Hospital, Lucknow.
7. Participated in the CME for the doctors of Uttar Pradesh Provincial Medical Services in Sep. 1995 and talked about management of epilepsy.
8. Participated in the CME for the doctors of Uttar Pradesh Provincial Medical Services in Feb. 1996 and talked about common neurological problems.
9. Appeared on Lucknow Doordarshan and talked about new dimensions in the management of headache on 7th Nov. 1995.
10. Invited to talk on enhancing ring lesions in the brain on Sept. 1996 by Allahabad Medical Association.
11. Invited by Indian Academy of Neurology in Oct. 1996 to deliver a lecture on electrophysiology of spinal root lesions, in the national continuing medical education program.
12. Invited by Association of Neuroscientists of Eastern India at Ranchi to talk on "new concepts in acute transverse myelitis" in Oct. 1997.
13. Invited to give a lecture on "Muscular Dystrophies with special reference to Duchenne muscular dystrophy" at the Kanpur chapter of Indian Academy of Pediatrics, in Oct. 1997.
14. Invited to give a lecture on "intra-operative monitoring of operations at cranio-vertebral junction" at an update on cranio-vertebral anomalies at Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, in Oct. 1997.
15. Delivered a guest lecture on "Epilepsy-Clinical aspects and localization" on 01-10-1999 at National workshop on magnetic resonance imaging and spectroscopy with emphasis on neurosciences (23-09-1999 to 12-10-1999), SGPGIMS, Lucknow, India.
16. Delivered a guest lecture on 'Headache and Epilepsy' on 18-03-2000, at National Academy of Sciences, NASc Bldg, Allahabad.
17. Delivered a guest lecture on "Management of epilepsy in the pediatric age group with special reference to newer anti-epileptic drugs" at Lucknow chapter of the Indian Academy of Pediatrics, Hotel Clarks Awadh, Lucknow, India, on 10-08-2000.

18. Delivered a guest lecture on "Management of epilepsies and epileptic syndromes" at Allahabad chapter of Indian Academy of Pediatrics, Hotel Presidency, Allahabad on 10-09-2000.
19. Participated in the interactive session and lecture with bright students of science under CPYLS program of CSIR at Central Institute of Medicinal and Aromatic Plants (CIMAP), Lucknow on 20-12-2003.
20. Invited to deliver Lecture on "Beauty of Science" under CSIR Program on Youth for Leadership in Science (CPYLS) at National Botanical Research Institute (NBRI), Lucknow to be held on 15-01-2004.
21. Delivered lecture on "New personal observations in Neurology" at Kurukshetra University, Kurukshetra, during Goyal Award Ceremony, 02-03-2004.
22. "Infection related epilepsy" Invited guest lecture delivered at 7th National CME – Allahabad Medical Association Neurosciences Update, 5th September, 2004, Allahabad, Uttar Pradesh, India.
23. "Diagnostic Criteria of Demyelinating Neuropathies – a critical appraisal" Invited guest lecture at "National Neuroscience Conference – NIMHANS Golden Jubilee Celebrations" at National Institute of Mental Health & Neuro-Sciences, 10-12 October, 2004, Bangalore, Karnataka, India.
24. "Neuro-otological considerations in head injury – panel discussion" 26th Annual Conference of Neuro-otological & Equilibrimetric Society of India, at Sanjay Gandhi Post-graduate Institute of Medical Sciences, 8-10 October, 2004, Lucknow, Uttar Pradesh, India.
25. Delivered guest lecture on "Metabolic myopathy including mitochondrial cytopathies" at CME of KGMU centenary celebrations at King George's Medical University, 2nd April, 2005.
26. Delivered guest lecture on "Proximal Muscle Weakness" at the Meeting of the Lucknow Orthopedic Club, 2005.
27. Delivered guest lecture on "NMR in Muscular Dystrophy" at the 1st Foundation Day Symposium held at the "Centre of Biomedical Magnetic Resonance, SGPGIMS Campus, Lucknow, 9th& 10th March, 2007.
28. Delivered guest lecture on "Primary and Secondary Prevention of Stroke" at the International Congress of Indian Hypertension Society at Central Drug Research Institute, Lucknow, 15th March, 2007.
29. Delivered guest lecture on "Screening and Management of Cerebrovascular Accidents in Type II Diabetes Mellitus" at the Diabetes – Endocrinology Update – 2007, held at Sanjay Gandhi PGI of Medical Sciences, Lucknow, 17th& 18th March, 2007.
30. Delivered guest lecture on "Management of Stroke with stress on preventive aspect" Amity University, NOIDA, 2008, 17th April, 2008.
31. "Muscle cramps" Invited guest lecture delivered at 8th meeting of Asian & Oceanian myology centre at Leela kampinsky, Mumbai, on 23rd and 24th May 2009.
32. "Non-compressive myelopathy" Invited guest lecture delivered at 58th Annual Conference of Neurological Society of India, Lucknow, 17-20th December 2009.
33. "Nutritional neuropathy" International symposium on Peripheral Nerve Disorders held in Hyderabad under the aegis of "Foundation for Neuromuscular Diseases" Hyderabad, India in association with Twin Cities Neurological Society, on March 6th& 7th , 2010.
34. "Intravenous immunoglobulins in peripheral nervous system disorders" Invited guest lecture delivered at 19th Annual Conference of the Indian Academy of Neurology, 22nd to 25th September, 2011.
35. Delivered Radio talk on Radio City on Parkinson's Disease on World Parkinson Day, May, 2011.
36. Delivered Radio talk on All India Radio on Dementia on World Dementia Day, June , 2011.
37. Delivered a public lecture on "Stroke prevention and management" at Hindi Bhawan, Lucknow, October,2011.
38. Delivered several radio talks at "Health & Fitness", All India Radio on medical subjects in 2015, 2016, 2017 and 2018.
39. Dr. Sunil Pradhan participated in National Webinar on "Corona challenges & opportunities" organized by "Yuva Chetna" National platform, New Delhi and participated in Covid-Awareness programs of Doordarshan and Aakashwani, Lucknow.

Certified that the above mentioned information is true to best of my knowledge.

(Sunil Pradhan)

Elaborate description of Dr. Sunil Pradhan's Biodata

Dr. Sunil Pradhan is one of the most eminent teachers in the field of Neurology in the northern India. After completing his MBBS, MD (Medicine) and DM (Neurology) courses from King George's Medical College, Lucknow, he preferred to gain more experience in Neurology before settling down and chose to work in various capacities under the most eminent Neurologists of that time. He worked under late Dr. Anil D. Desai (an eminent myologist), Dr. Noshir H Wadia (regarded as the father-figure of Neurology in India as of now) and Dr. Sarosh M Katrak, as senior registrar at Jaslok Hospital & Research Center, Mumbai. As clinical neurophysiology was a new upcoming branch of Neurology at that time with very few trained persons in India, he received 2 months short training on this subject under Dr. Piroza N Wadia in the same hospital and then proceeded to National Institute of Mental Health & Neuro-Sciences (NIMHANS), Bangalore as CSIR Scientist Pool Officer, to complete this training under another stalwart of that time Dr. M. Gouri-Devi. Thereafter, he worked under Prof. JMK Murthy (currently Editor-in-Chief of Neurology India, which is a highly indexed official journal of the Neurological Society of India) as a young faculty at Nizam's Institute of Medical Sciences, Hyderabad. After finally settling down as Assistant Professor of Neurology at Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, he further proceeded to Nagoya, Japan (as JICA fellow) to receive 6 months training in Neuromuscular diseases and Neuropathology.

Dr. Sunil Pradhan's eminence as a medical teacher can be judged by the following parameters –

1. Teacher for students pursuing DM (Neurology) course
2. Research guide to students pursuing DM (Neurology) & PhD in basis neuroscience
3. Starting and establishing DM (Neurology) course at IHBAS, Delhi
4. Teaching medical fraternity through lectures organized by regional societies
5. Participating as a guest lecturer in National level Neurology conferences
6. Delivering named orations on invitation
7. Delivering invited and conference sponsored lectures at International platform
8. Delivering public lectures to create disease awareness among the general public
9. Writing chapters in the annual proceedings of the national societies
10. Writing book chapters in National and International books
11. Examining the students at various centers of India as examiner for final DM examination
12. Screening of research articles written by other authors as reviewer / Editor
13. Presenting research work in International conferences
14. Pursuing original research work for better understanding of Neurology

1)Teacher for students pursuing DM (Neurology) course:

Pradhan is teaching the students pursuing DM (Neurology) course and guiding the dissertations of some of them for last 20 years. His students are now working at almost all premier medical Institutes in India holding academic posts while some others are practicing Neurologists in nearly all states of India. Most of them are in constant touch with him for day to day clinical problems and has a great regard for him as a teacher. Pradhan is known among his students for giving his 100% to them and for not keeping any knowledge to himself. Currently his department enrolls 6 DM students every year.

2) Research guide to students pursuing DM (Neurology) & PhD in basic neuroscience

Pradhan is guiding the research work of DM students as they are supposed to write 2 papers publishable in indexed journals as part of their DM curriculum. In addition he has roped in several of his students in his own research work as is reflected in his publications where most of his national as well as international papers contain names of his students as co-authors. He also had been thesis guide and co-guide to students pursuing PhD in basic neuroscience. Following is the list of papers that came out of his guidance:

(a) As thesis guide – the papers published:

Thesis: Characterization of neuromuscular disorders (muscular dystrophies / myopathies) by **NMR** (nuclear magnetic resonance) spectroscopy. Synopsis submitted for the partial fulfillment of Ph.D. by Niraj Kumar Srivastava at Sanjay Gandhi PGI of Medical Sciences, Lucknow – 2004 –2009.

Papers published (Pradhan is second and corresponding author in all of them):

1. Srivastava NK, Pradhan S*, Mittal B, Kumar R, Nagana Gowda GA. An improved single step standardized method of lipid extraction from human skeletal muscle tissue.Analytical Letters 2006; 39: 297-315.
2. Srivastava NK, Pradhan S*, Mittal B, Raj Kumar, Pandey CM and Nagana Gowda G.A. Novel corrective equations for complete estimation of human tissue lipids following their partial destruction by PCA pre-treatment: High-resolution ^{1}H-NMR based study. NMR in Biomedicine. 2008: 21; 89-100.
3. Srivastava NK, Pradhan S*, Mittal B, Roy R. High resolution NMR based analysis of serum lipids in Duchenne Muscular Dystrophy patients and its possible diagnostic significance (Proceedings of the *ISMRM: International Society for Magnetic Resonance in Medicine, 2008.*
4. Srivastava NK, Pradhan S*, Mittal B, Gowda GA, Roy R, Khetrapal CL. High resolution NMR based analysis of serum lipids in Duchenne Muscular Dystrophy patients of Northern India and its possible diagnostic significance. NMR Biomed 2010;23:13-22.
5. Srivastava NK, Pradhan S*, Gowda GA, Kumar R. In vitro, a high-resolution 1H & 31P NMR based analysis of the lipid components in the tissue, serum and CSF of the patients with primary brain tumors: one possible diagnostic view. NMR Biomed 2010; 23: 113-122.

(b) As thesis co-guide – the papers published:

Thesis: Study of **gene polymorphism** and mutations in **Alzheimer's disease** and other dementias in a North Indian Cohort. Thesis submitted for the fulfillment of Ph.D. by Miss Pratima Pandey at DDU Gorakhpur University, Gorakhpur – 2005 –2010.

Papers published (Pradhan is second and corresponding author in all of them):

1. Pandey P.**Pradhan S***, Mittal B. Presenilin gene predisposes for degenerative but not vascular dementia: a North Indian population based study. Dement Geriatr Cogn Disord. 2007; 24: 151-161.
2. Pandey P, **Pradhan S***, Mittal B. LRP-associated protein gene (LRPAP1) and susceptibility to degenerative dementia. Genes Brain Behav. 2008; 7: 943-950.

3. Pandey P, **Pradhan S***, Modi DR, Mittal D. MTHFR and ACE gene polymorphisms and risk of vascular and degenerative dementias in the elderly. Brain and Cognition 2009; 71: 295-299.

Thesis: Prospective evaluation of magnetization transfer MR imaging in the diagnosis of infectious meningitis. Kamra P, Gupta RK, **Pradhan S**, Prasad KN, Kathuria MK (1999-2001). Thesis submitted for the fulfillment of Ph.D. by Kamra P.

Papers published:

1. Kamra P, Vatsal DK, Hussain M, **Pradhan S**, Venkatesh SK, Gupta RK. MRI demonstration of unsuspected intraventricular rupture of pyogenic cerebral abscess in patients on treatment for meningitis. Neuroradiology 2002; 44: 114-117.
2. Kamra P, Azad R, Prasad KN, Jha S, **Pradhan S**, Gupta RK. Infectious meningitis: prospective evaluation with magnetization transfer MRI. Brit J Radiol 2004; 77: 387-394.

Thesis: Multiparametric quantitation of the perilesional region in patients with healed/healing solitary cysticercus granuloma. Kumar R, Gupta RK, Rathore RKS, Pradhan S. Thesis submitted for the fulfillment of Ph.D. by Kumar R.

Papers published:

1. Kumar R, Gupta RK, Rathore RKS, Rao SB, Chawla S, **Pradhan S**. Multiparametric quantitation of the perilesional region in patients with healed/healing solitary cysticercus granuloma. Neuroimage 2002; 15 (4): 1015-1020.
2. Kumar R, Gupta RK, Husain M, Vatsal DK, Chawla S, Rathore RK, **Pradhan S**. Magnetisation transfer MR imaging in patients with post-traumatic epilepsy. AJNR Am J Neuroradiol 2003; 24: 218-224.
3. Kumar R, Gupta RK, Rao SB, Chawla S, Husain M, **Pradhan S**, Rathore RKS. Assessment of tissue damage with magnetization transfer ratio and T2 quantitation in traumatic brain injury. Magn Reson Imaging 2003; 21: 893-899.

Thesis: Role of Compylobacter jejuni infection in Guillain Barre' Syndrome. Sinha S, Prasad KN, **Pradhan S**, Ayyagari A (2001-2006). Thesis submitted for the fulfillment of Ph.D. by Sinha S.

Papers published:

17. Sinha S, Prasad KN, **Pradhan S**, Jain D, Jha S. Detection of preceding Campylobacter jejuni infection by polymerase chain reaction in patients with Guillain Barre' syndrome. Trans R Soc Trop Med Hyg 2004; 98: 342-346.
18. Sinha S, Prasad KN, Jain D, Pandey CM, Jha S, **Pradhan S**. Preceding infections and anti-ganglioside antibodies in patients with Guillain-Barré syndrome: a single centre prospective case-control study. Clin Microbiol Infect 2007; 13: 334-337.

Thesis: Role of gene polymorphism in genetic susceptibility of migraine in a north Indian population. Joshi G, **Pradhan S**, Mittal B. Thesis submitted for the fulfillment of Ph.D. by Joshi G.

Papers published:

1. Joshi G, **Pradhan S**, Mittal B. Role of ACE 1D and MTHFR C677T polymorphism in genetic susceptibility of migraine in a north Indian population. J Neurol Sci 2009; 277: 133-137.
2. Joshi G; **Pradhan S**; Mittal B. Role of the oestrogen receptor (ESR1 PvuII and ESR1 325 C->G) and progesterone receptor (PROGINS) polymorphisms in genetic susceptibility to migraine in a North Indian population. Cephalalgia: 2010; 30(3): 311-320.
3. Joshi G, **Pradhan S,** Mittal B. No direct association of serotonin transporter (STin2 VNTR) and receptor (HT 102T>C) gene variants in genetic susceptibility to migraine. Dis Markers. 2010; 29: 223-229.

Thesis: Investigation of gene polymorphisms in genetic susceptibility to migraine. Ghosh J, Joshi G, **Pradhan S**, Mittal B. Thesis submitted for the fulfillment of Ph.D. by Ghosh J.

Papers published:

1. Ghosh J, Joshi G, **Pradhan S**, Mittal B. Investigation of TNFA 308G > A and TNFB 252G > A polymorphisms in genetic susceptibility to migraine. J Neurol 2010; 257: 898-904.
2. Ghosh J, **Pradhan S**, Mittal B. Role of dopaminergic gene polymorphisms (DBH 19 bp indel and DRD2 Nco I) in genetic susceptibility to migraine in North Indian population. Pain Med. 2011 Jul; 12 (7): 1109-11. doi: 10.1111/j.1526-4637.2011.01153.x. Epub 2011 Jun 13.

3) Starting and establishing DM (Neurology) course at IHBAS, Delhi :

Pradhan joined Institute of Human Behavior & Allied Sciences (IHBAS), Delhi in September 2007 (while maintaining lien with his parent Institute SGPGIMS at Lucknow) as Head of the Department of Neurology and subsequently became Medical Superintendent of the same Institute. It was primarily a psychiatry Institute with newly opened up Departments of Neurology and Neurosurgery. Within one year of joining, he could establish a state of the art Neurophysiology lab with EEG, EMG, NCV, Evoked Potential and sleep lab facility. All these tests were standardized and put to routine patient use. New emergency service and private wards were made functional and all the requirements to start DM course were fulfilled. Subsequently IHBAS got clearance through MCI inspection to start DM course with one seat. After enrollment of first candidate of DM (Neurology) and institution of regular teaching program for the same, Pradhan came back to his parent Institution in Lucknow in April 2009.

4) Teaching medical fraternity through lectures organized by regional societies

During the 22 years tenure as faculty at Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, Pradhan regularly participated and gave lectures on various neurological topics to update physicians, pediatricians, neurologists, neurosurgeons and psychiatrists with recent advance. Most of these lectures were organized by the regional or local chapters of the national academic societies. A list of some of the important lectures delivered by Dr. Pradhan is given below:

1. Delivered a lecture on “diagnosis and management of low back pain” in the CME program of Indian Medical Association (Lucknow chapter) on 20th May, 1990.
2. Invited to talk on “recent advances in myasthenia gravis” in the CME program at Command Hospitals, Lucknow on 28th Feb. 1993.
3. Delivered lecture on “recent advances on the diagnosis and management of epilepsy”, at the refresher course of Indian Medical Association - College of General Practitioners (sub-faculty Kanpur), which was widely covered by most of the regional daily newspapers.
4. Talked about the management of epilepsy in a CME program of Shahjahanpur Medical Association at Shahjahanpur, UP in Dec. 1994.
5. Invited for a question-answer session on neurological diseases at IFFCO general hospital, Jagdishpur, UP in Jan. 1995.
6. Invited to talk on diagnosis and management of spastic children with or without mental retardation during the silver jubilee annual day celebration (18th Feb. 1995) at Swami Vivekanand Hospital, Lucknow.
7. Participated in the CME for the doctors of Uttar Pradesh Provincial Medical Services in Sep. 1995 and talked about management of epilepsy.
8. Participated in the CME for the doctors of Uttar Pradesh Provincial Medical Services in Feb. 1996 and talked about common neurological problems.
9. Invited to talk on enhancing ring lesions in the brain on Sept. 1996 by Allahabad Medical Association.
10. Invited to give a lecture on “Muscular Dystrophies with special reference to Duchenne muscular dystrophy” at the Kanpur chapter of Indian Academy of Pediatrics, in Oct. 1997.
11. Delivered a guest lecture on “Epilepsy-Clinical aspects and localization” on 01-10-1999 at National workshop on magnetic resonance imaging and spectroscopy with emphasis on neurosciences (23-09-1999 to 12-10-1999), SGPGIMS, Lucknow, India.
12. Delivered a guest lecture on ‘Headache and Epilepsy’ on 18-03-2000, at National Academy of Sciences, NASc Bldg, Allahabad.
13. Delivered a guest lecture on “Management of epilepsy in the pediatric age group with special reference to newer anti-epileptic drugs” at Lucknow chapter of the Indian Academy of Pediatrics, Hotel Clarks Awadh, Lucknow, India, on 10-08-2000.
14. Delivered a guest lecture on “Management of epilepsies and epileptic syndromes” at Allahabad chapter of Indian Academy of Pediatrics, Hotel Presidency, Allahabad on 10-09-2000.
15. Delivered lecture on “New personal observations in Neurology” at Kurukshetra University, Kurukshetra, during Goyal Award Ceremony, 02-03-2004.
16. “Neuro-otological considerations in head injury – panel discussion” 26th Annual Conference of Neuro-otological & Equilibrimetric Society of India, at Sanjay Gandhi Post-graduate Institute of Medical Sciences, 8-10 October, 2004, Lucknow, Uttar Pradesh, India.
17. Delivered guest lecture on “Metabolic myopathy including mitochondrial cytopathies” at CME of KGMU centenary celebrations at King George’s Medical University, 2nd April, 2005.
18. Delivered guest lecture on “Proximal Muscle Weakness” at the Meeting of the Lucknow Orthopedic Club, 2005.
19. Delivered guest lecture on “NMR in Muscular Dystrophy” at the 1st Foundation Day Symposium held at the “Centre of Biomedical Magnetic Resonance, SGPGIMS Campus, Lucknow, 9th& 10th March, 2007.
20. Delivered guest lecture on “Primary and Secondary Prevention of Stroke” at the International Congress of Indian Hypertension Society at Central Drug Research Institute, Lucknow, 15th March, 2007.

21. Delivered guest lecture on "Screening and Management of Cerebrovascular Accidents in Type II Diabetes Mellitus" at the Diabetes – Endocrinology Update – 2007, held at Sanjay Gandhi PGI of Medical Sciences, Lucknow, 17th& 18th March, 2007.
22. Delivered lecture on "Management of migraine" at a lecture organized by "Johnson & Johnson" at Hotel Clarks Awadh, Lucknow in January 2011.
23. Delivered lecture on "Mechanisms of migraine" at a Migraine symposium organized by "Johnson & Johnson" at Hotel Taj, Lucknow, in March 2011.

5) Participating as a guest lecturer in National level Neurology conferences

Pradhan contributed enormously in imparting knowledge to fellow neurologists by delivering lectures in various national level Neurology conferences. He is a favorite speaker in different conferences because of the contents as well as style of his talk. Some of the important talks delivered by him are as follows:

1. Invited by Indian Academy of Neurology in Oct. 1996 to deliver a lecture on electrophysiology of spinal root lesions, in the national continuing medical education program.
2. Invited by Association of Neuroscientists of Eastern India at Ranchi to talk on "new concepts in acute transverse myelitis" in Oct. 1997.
3. Invited to give a lecture on "intra-operative monitoring of operations at cranio-vertebral junction" at an update on cranio-vertebral anomalies at Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, in Oct. 1997.
4. "Infection related epilepsy" Invited guest lecture delivered at 7th National CME – Allahabad Medical Association Neurosciences Update, 5th September, 2004, Allahabad, Uttar Pradesh, India.
5. "Diagnostic Criteria of Demyelinating Neuropathies – a critical appraisal" Invited guest lecture delivered at "National Neuroscience Conference – NIMHANS Golden Jubilee Celebrations" at National Institute of Mental Health & Neuro-Sciences, 10-12 October, 2004, Bangalore, Karnataka, India.
6. "Muscle cramps" Invited guest lecture delivered at 8th meeting of Asian & Oceanian myology centre at Leela kampinsky, Mumbai, on 23rd and 24th May 2009.
7. **"Non-compressive myelopathy"** Invited guest lecture delivered at **58th Annual Conference of Neurological Society of India, Lucknow,** 17-20th December 2009.
8. "Nutritional neuropathy" International symposium on Peripheral Nerve Disorders held in Hyderabad under the aegis of "**Foundation for Neuromuscular Diseases**" Hyderabad, India in association with **Twin Cities Neurological Society**, on March 6th& 7th , 2010.
9. "Intravenous immunoglobulins in peripheral nervous system disorders" Invited guest lecture delivered at 19th Annual Conference of the Indian Academy of Neurology, 22nd to 25th September, 2011.
10. SHINE-2018 Annual Conference of Clinical Neurology organized by Institute of Neurology, Chennai.
11. Third TBM Consortium Conference, SGPGIMS, 2019.

6) Delivering named orations on invitation

Because of his original contributions in the field of Neurology and his articulate speech Pradhan has been awarded two orations so far which he delivered at respective places. These are:

1. **Dr. Kapil Sood Oration** at 14th UP Neurocon, Meerut, 2005.
2. **Dr. Dhamija Oration** at 9th ann. meeting, Delhi Neurol. Assoc. (DNA), AIIMS, New Delhi, 2009.
3. **Dr. Dhamija Oration** at 18th ann. meeting, Delhi Neurol. Assoc. (DNA), AIIMS, New Delhi, 2018.

7) Delivering invited and conference sponsored lectures at International platform

On the basis of specific research work of international standard, Pradhan has been invited 5 times to deliver lectures in International conferences in which the total expenditure was paid by the organizers. These lectures are as follows:

1. Invited to deliver lecture on "Valley sign in Duchenne muscular dystrophy" at Oxford Muscle symposium, Marion Society of Muscle Dis. Oxford, UK. (1999).
2. Invited to deliver lecture on "Poly-hill sign in facioscapulohumeral dystrophy" at Oxford Muscle symposium, Marion Society of Muscle Diseases, Oxford, UK. (2002).
3. Invited to deliver lecture on "Recent progress in Japanese encephalitis in India" in 7th Japanese Neuro-infectious disease congress at Tokyo Women's Medical University, Tokyo, Japan (2002).
4. Invited to deliver lecture on "Virology of Japanese encephalitis – emerging & re-emerging pattern" at Department of Microbiology, Tokyo Metropolitan City Hospital, Tokyo Women's Medical University, Tokyo, Japan (2002).
5. Invited to deliver lecture on "Neurocysticercosis and other Infective causes of Epilepsy" in the session "Prevention of Epilepsy" at 5th Asian and Oceanian Epilepsy Congress, Bangkok, Thailand, 28th – 31st August 2004.

8) Delivering public lectures to create disease awareness among the general public

Dr. Pradhan is actively involved in regional medical camps organized by social organizations in rural and suburban areas. He has also participated in several of the social medical programs at regional levels and delivered talks on different neurological subjects. He has written several articles in newspapers to make public aware of neurological disorders. He made several appearances in National and regional Radio and Television on neurological topics of public interest. His social medical activities got recognition when he was awarded **"Rotary International: Vocational Excellence Prize** in the year 2002",**"Pride of India Award"** of Indo-US Friends Society in 2007 and **"Bharat Excellence Award"** of Friendship Forum of India in 2008. Some of his social appearances are as follows:

1. Appeared on Lucknow Doordarshan and talked about new dimensions in the management of headache on 7th Nov. 1995.

2. Participated in the interactive session and lecture with bright students of science under CPYLS program of CSIR at Central Institute of Medicinal and Aromatic Plants (CIMAP), Lucknow on 20-12-2003.
3. Invited to deliver Lecture on "Beauty of Science" under CSIR Program on Youth for Leadership in Science (CPYLS) at National Botanical Research Institute (NBRI), Lucknow to be held on 15-01-2004.
4. Delivered guest lecture on "Management of Stroke with stress on preventive aspect" Amity University, NOIDA, 2008, 17th April, 2008.
5. Participated in discussion on Epilepsy in "Krishi Darshan" program of Doordarshan, New Delhi, 2008.
6. Delivered Radio talk on All India Radio, Lucknow on Dementia on World Dementia Day, June, 2010.
7. Delivered talk on Radio City Lucknow on Parkinson's disease on World Parkinson Day, May, 2011.
8. Delivered Radio talk on All India Radio, Lucknow on Dementia on World Dementia Day, June, 2011.
9. Delivered talk on All India Radio on Headache, Epilepsy & Dementia 21st Sept., 2011.
10. Delivered a public lecture on "Stroke prevention and management" at Hindi Bhavan, Lucknow, October, 2011.
11. Delivered several radio talks at "Health & Fitness", All India Radio on medical subjects in 2015, 2016, 2017 and 2018.

9) Writing chapters in the annual proceedings of the national societies review articles in journals

Pradhan has constantly updated himself and the Indian Neurology Fraternity by writing established accounts and the recent advances in various subjects of Neurology in the proceedings of national seminars, conferences and symposiums. He also wrote updated review article in several subjects of Neurology. Some of the important published chapters are as follows:

(a) ***Book Chapters published in seminars, symposia, and conference volumes:***

1. **Pradhan S**. Role of therapeutic drug monitoring in epilepsy. In: Nag D, Agarwal A, eds., CME on epilepsy. Lucknow: Indian Epilepsy Association (UP chapter), 1993: 86-90.
2. **Pradhan S**, Singh MN. When should head CT be ordered in a case of epilepsy? In: Nag D, Agarwal A, Garg RK, eds., Second CME on epilepsy. Lucknow: Indian Epilepsy Association (UP chapter), 1994: 87-91.
3. **Pradhan S**, Singh MN, Kalita J. Brachial neuritis: amyotrophic patterns and their diagnostic implications. 2nd Annual Conference of the Indian Academy of Neurology 1994: pp 35.
4. **Pradhan S**, Pandey N. Intravenous immunoglobulins in Guillian Barre syndrome. In: Chandra A, Ahuja RC, eds., Medicine Update- UPICON 95. Lucknow: Association of Physicians of India (UP chapter), 5, 1995: 290-293.
5. **Pradhan S**, Pandey N. Dystrophin. In: Chandra A, Ahuja RC, eds., Medicine Update- Upicon 95. Lucknow: Association of Physicians of India (UP chapter), 5, 1995: 246-251.
6. **Pradhan S**. Intra-operative electrophysiological monitoring during surgery at cranio-vertebral junction. In: Jain VK, Behari S, eds., Cranio-vertebral junction anomalies - the Indian experience. Lucknow: Sanjay Gandhi PGI of Medical Sciences, 1997: 31-34.

7. **Pradhan S**. Muscle disorders with special reference to pseudomuscular hypertrophy. In: Kapoor R, ed., Pediatric Neurology Update. Kanpur: Indian Academy of Pediatrics (Kanpur chapter), 1997: 41-51.
8. Gupta RK, Kathuria MK, Pandey R, Dev R, Hussain M, **Pradhan S**, Malhotra H Magnetization transfer MR in CNS tuberculosis, Fifth scientific meeting, Internat. Soc. for MR in Med., Vancouver, B.C., Canada, 1997: April 12-18.
9. Mamta B Singh, **Pradhan S**. Approach to a case with proximal muscle weakness. XIth Prof. N. N. Gupta Oration and Neurology Update, 1999: 129-146.
10. **Pradhan S**. Metabolic myopathy. XVIth Prof. N. N. Gupta Oration and Neurology Update, 2004: 129-146.
11. **Pradhan S**, Yadav RK. Scenario of epilepsy in the developing countries. CME book – 14th UP Neurocon, Meerut. 2005: 23-31.
12. Pandey P, **Pradhan S** and Mittal B. ApoE and PS1 gene polymorphisms in Alzheimer's disease and other dementias in regional North Indian population " proceedings of All India Cell Biology Conference, ITRC, Lucknow, 2005.
13. Pradhan S, Mani VE. Muscular dystrophy. In: Mukherjee A, bhattacharya K, Singh G. IAN Textbook of Neurology. The Health Sciences Publisher, New Delhi, 2018, pp 642-653.
14. Pradhan S, Meena AK. Congenital Muscular Dystrophy. In: Gupta P, Mennon PSN, Ramji S, Lodha R. PG Text Book of Pediatrics, 2nd Adition, J P Brothers Medical Publishers, New Delhi, 2018: pp 2628-2639.

(b) Review articles published in Journals:

1. Srivastava NK, Yadav RK, **Pradhan S**. Metabolic myopathies: clinical, biochemical and histopathological basis of diagnosis. Ann Neurosci 2005; 12: 87-98.
2. Pandey P and **Pradhan S***. Homocysteine: A possible modifiable risk factor in vascular dementia. Ann Neurosci 2006; 13: 12-18.
3. **Pradhan S**, Yadav RK. Seizures and epilepsy in central nervous system infection. Neurology Asia 2004; 9: 4-9.
4. Srivastava NK, Yadav R, **Pradhan S**. Metabolic myopathies: Clinical, Biochemical, Genetic and Histopathological basis of diagnosis. Annals of Neurosciences.2005; 12:87-98.
5. Panigrahi I, **Pradhan S***. Utility of database and information technology in pediatric neurology. Neurology India 2002; 50:123-127.
6. **Pradhan S.**Limb-girdle muscular dystrophy type 2A (Editorial). Neurology India, 2010; 58: 509-511.
7. **Pradhan S**. Invited Commentary. Selectivity of weakness among different muscles or muscle groups has always fascinated the clinicians in arriving at specific diagnosis of motor system disease. Neurol India. 2009; 57(3): 286-287.

10. Writing book chapters in National and International books

1. **Pradhan S** and Gupta RK. Parainfectious and other infectious diseases. Gupta RK, Lufkin J, eds., MR Imaging and Spectroscopy of central nervous system infection. New York: Kluwer Academy / Planum Publishers, 2001: 273-296.
2. **Pradhan S**. Muscular dystrophy: the Indian perspective. In: Garg RK, ed., Reviews in Tropical Neurology. Lucknow: Shivam Arts, 2002: 213-225.
3. **Pradhan S**, Wadia NH. Disorders of muscle (Myopathies). In: Wadia NH, ed., Neurological practice: an Indian perspective. New Delhi: Elsevier, 2005: 612-636.

4. Wadia NH and **Pradhan S**. Peripheral neuropathies. In: Wadia NH, ed., Neurological practice: an Indian perspective. New Delhi: Elsevier, 2005: 591-611.
5. **Pradhan S**. Idiopathic brachial plexus neuropathy. In: Murthy JMK, ed., Reviews in Neurology, Vol. 2. Hyderabad: Indian Academy of Neurology, 1995: 105-113.
6. **Pradhan S**. Electrophysiological evaluation of nerve root lesions. In: Murthy JMK, ed., Reviews in Neurology, Vol. 3. Hyderabad: Indian Academy of Neurology, 1996: 77-88.
7. **Pradhan S**. Investigation of visual loss: a neurologist's perspective. In: Mohandas S, Borgohain R, eds., Reviews in Neurology, Vol. 4. Hyderabad: Indian Acad. of Neurol, 1997.
8. **Pradhan S**. Valley sign in Duchenne muscular dystrophy. In: Mehendiratta MM, Katrak SM, Choudhury D, eds., Reviews in Neurology, Vol. 9. New Delhi: Indian Academy of Neurology, 2002: 245-248.
9. **Pradhan S**, Yadav RK. Scenario of epilepsy in the developing countries. CME book – 14th UP Neurocon, Meerut. 2005: 23-31.
10. **Pradhan S**, Malhotra HS. Diagnosis of acquired chronic demyelinating neuropathy with special reference to electrodiagnosis. In: Radhakrishnan K, ed. Reviews in Indian Neurology. IANCON Kerala 2005, vol 5, pp. 233-281.
11. **Pradhan S**. Vasculitic neuropathy. In: Khadilkar SV, Gingh G, eds. Reviews in Indian Neurology, IANCON, Pune 2011, vol 11.

11. Examining the students at various centers of India as examiner for final DM (Neurology) and other examinations

Pradhan's teaching skills are reflected in the fact that he is regularly called to take final DM (Neurology) examination at different premier Institutions of India. The Exams taken and the Institutions are as follows:

(a) External Examiner for DM (Neurology/Pediatric Neurology) final exam at:

1. King George's Medical University, Lucknow, 2001-2007 & 2010-2011.
2. G. B. Pant Hospital, New Delhi, 2008-2010.
3. All India Institute of Medical Sciences, New Delhi, 2010.
4. Nizam's Institute of Medical Sciences, Hyderabad, 2011.
5. The Bangur Institute of Neurological Sciences, Kolkata, 2011.

(b) Examiner for MBBS final examination (Medicine) at King George Medical Univ., Lucknow, 2005.

(c) Other national level exam-related activities

1. **Member** of the expert committee for interviewing SRF/RA (Medical & Pharmaceutical Sciences) at **CSIR (HRD group)**, New Delhi, 2004-2010.
2. **Member** of the expert committee, Combined Medical Examination for Central Medical Services, **Union Public Service Commission**, New Delhi, 2006.
3. **Member of the selection committee** for combined DM Entrance examination of Uttar Pradesh held at GSVM Medical College, Kanpur, 1997.
4. **Member of the selection committee** for the selection of lecturers in Neurology under Rajasthan Public Service Commission, 2001.
5. **Member of the selection committee** for the selection of lecturers in Neurology at Banaras Hindu University, Varanasi, 2006
6. **Member** of the expert committee, for the selection of Assistant Professor in Neurology at Central Government Institutes, **Union Public Service Commission**, New Delhi, 2008.

12. Screening of research articles written by other authors as reviewer / Editor

Due to his research activities in 4 major areas of Neurology, Pradhan has been constantly asked to review articles sent to different journals. Currently he is reviewer/editor of the following journals:

(a) Editor / Associate Editor of Scientific journals

1. Associate Editor of the Journal, **Neurology India**, a journal of the Neurological Society of India, 2009-till now.

(b) Peer Reviewer of articles in Journals

1. Elsevier Editorial System & Science Direct
2. The Lancet
3. Epilepsia
4. European Journal of Neurology
5. Acta Neurologica Scandinevica
6. Clinical Neurology and Neurosurgery (CNN)
7. Journal of the Neurological Sciences
8. Neurology India

10. Annals of Indian Academy of Neurology

13. Presenting research work in International conferences

Pradhan presented his research work in several international conferences in India as well as abroad and most of them are abstracted in supplements of international journals:

1. Pradhan S (1990) Electrical assesment of respiratory dysfunction in Guillian Barre syndrome. J Neurol Sci 98 (suppl): 343. **(Presented at 7th International Congress of Neuro-muscular Diseases, Munich, Germany)**
2. Sinha S, Misra KP, **Pradhan S**, Mittal B, Agarwal SS (1993) Preferential gene deletion at the central hot spot in Indian BMD patients. Am J Hum Genet 53: 1758.
3. Pradhan S, Gupta RK, Jain VK, Pandey R (1994) MR imaging in Juvenile asymmetric segmental spinal muscular atrophy. Neurology Update – 1st International conference on ODNS, New Delhi, November 19-22, 14d.1.
4. **Pradhan S**, Gupta RK, Rana PVS (1997) Magnetic resonance imaging in wasted leg syndrome. J Neurol Sci 150 (suppl): S 140. **(Presented at 16th World Congress of Neurology, Buenos Aires, Argentina).**
5. **Pradhan S** (1997) A morphometric study of the influence of motor unit recurrence pattern on various F-response parameters. J Neurol Sci 150 (suppl): S 299. **(Presented at 16th World Congress of Neurology, Buenos Aires, Argentina).**
6. **Pradhan S** (1997) Importance of new clinical sign in DMD patients with inconspicuous calf hypertrophy. J Neurol Sci 150 (suppl): S 52. **(Presented at 16th World Congress of Neurology, Buenos Aires, Argentina).**
7. **Pradhan S** (1997) Intercostal nerve somatosensory evoked potentials - a new technique for the localisation of spinal cord lesions. Electroencephalogr Clin Neuro-physiol 103: S 142.

(Presented at 14th International Congress of EEG and Clinical Neurophysiology, Florence, Italy).

8. **Pradhan S** (2000) Normotensive state during acute phase of hypertensive intracerebral haemorrhage., Stroke 31: 2883.**(Presented at 16th World Congress of Neurology, Sydney, Australia, 2005)**
9. **Pradhan S**, Gupta RK (2001) Pathogenesis of perilesional gliosis in neurocysticercosis. J Neurol Sci 187 (suppl-1): S 410. **.(Presented at 16th World Congress of Neurology, Sydney, Australia, 2005)**
10. **Pradhan S** (2005) Diagnostic approach to a patient with proximal muscle weakness. Current trends in neuromuscular diseases – an international symposium, New Delhi, 5-7 March 2005: pp 49.
11. **Pradhan S** (2005) Metabolic myopathy. Current trends in neuromuscular diseases – an international symposium, New Delhi, 5-7 March 2005: pp 50.
12. **Pradhan S**. Neurocysticercosis and infective causes of epilepsy. (**Presented at 5th Asian and Oceanian Epilepsy Congress, Bangkok 2004: pp 2.)**
13. **Pradhan S**. Clobazam in the treatment of Juvenile Myoclonic Epilepsy. J Neurol Sci 2005; 238 (Suppl): S141. **.(Presented at 18th World Congress of Neurology, Sydney, Australia, 2005)**
14. **Pradhan S**. Role of perilesional gliosis in the pathogenesis of secondary epilepsy due to infections and trauma. J Neurol Sci 2005; 238 (Suppl): S141. **(Presented at 18th World Congress of Neurology, Sydney, Australia, 2005)**
15. **Pradhan S**. Recurrent episodic central demyelinating disease with myelo-optic predilection. J Neurol Sci 2005; 238 (Suppl): S241.**(Presented at 18th World Congress of Neurology, Sydney, Australia, 2005)**
16. **Pradhan S**. Evolution of clinical features in Dementia with Lewy-body during long-term follow-up. J Neurol Sci 2005; 238 (Suppl): S298. **.(Presented at 18th World Congress of Neurology, Sydney, Australia, 2005)**
17. **Pradhan S**. Patterns of blood pressure during acute phase of hypertensive intracerebral hemorrhage. J Neurol Sci 2005; 238 (Suppl): S431. **(Presented at 18th World Congress of Neurology, Sydney, Australia, 2005)**
18. **Pradhan S**. Progress in Japanese Encephalitis in India. J Neurol Sci 2005; 238 (Suppl): S472. **(Presented at 18th World Congress of Neurology, Sydney, Australia, 2005)**

Summary of the research work of Dr. Sunil Pradhan

Dr. Sunil Pradhan has described several new clinical signs in muscular dystrophies and his seminal contributions have led to a better understanding of pathophysiological mechanisms unexplained clinical presentations and in several neurological disorders.

1) Viral Encephalitis:

a. Japanese encephalitis and Parkinsonism: Pradhan demonstrated for the first time that on rare occasions a virus can selectively involve substantia nigra with clinical presentation similar to Parkinson's disease. With the help of 5 rare patients of Japanese encephalitis (JE), who had involvement of only substantia nigra and of no other part of the brain on magnetic resonance imaging (MRI), it was demonstrated that clinically these patients had pure parkinsonian features that were responsive to levodopa therapy.**[1]** In the correspondence that followed this paper, Japanese authors affirmed that they could produce a rat model of Parkinson's disease by injecting JE virus in the peritoneum but only in young rats and in response to this letter, Pradhan admitted to young age of his patients and discussed that *several young onset non-familial patients of Parkinson's disease are*

*seen in areas endemic for JE, raising the possibility that subclinical JE infection (which is expected to be 9 times more common than overt infection in endemic areas) might be responsible for either reduced number or early abiotrophy of the nigral cells resulting in Parkinson disease later in life.***[2]** This viral theory of Parkinson disease got further support from Pradhan's another paper on this subject showing latency of JE virus for several months in some patients who had second phase of illness before the complete recovery from first phase. The second phase with increase in size and number of brain lesions on MRI however, had more significant movement disorders compared to first phase.**[3]**

Previously, evidence for viral theory of Parkinson's disease was confined to autopsy findings of patients with encephalitis lethargica, a disease that exists no more. Following Pradhan's documentation of Parkinson-like disease after JE infection, several authors showed selective involvement of substantia nigra with other viral infections e.g., West Nile, Epstein-Barr,Coxsackie B4 and St. Louis viruses (Bosanko et al. West Nile virus encephalitis involving the substantia nigra .....Arch Neurol 2003; Guan et al.Reversible parkinsonism due to involvement of substantia nigra in Epstein-Barr virus encephalitis. Mov Disord 2011; Cree et al.A fatal case of coxsackievirus B4 meningoencephalitis.Arch Neurol 2003; Cerna et al. St. Louis encephalitis and the substantia nigra…AJNR Am J Neuroradiol 1999).
These reports give further credence to Pradhan's work on viral theory of Parkinson's disease. Based on this work, Pradhan was invited and sponsored by the 7th Japanese Neuro-infectious disease congress, 2002, Tokyo, Japan, to talk on "Progress of Japanese encephalitis in India".**[4]**

b. Herpes simplex encephalitis and Kluver Bucy syndrome in children: Kluver Bucy syndrome (KBS) is known to occur after bilateral temporal lobe affection in Herpes simplex encephalitis. Manifestations in adults are well known and include among others psychic blindness, placidity (with loss of normal anger and fear), hyper-orality, hyper-metamorphosis and hyper-sexuality. Pradhan described for the first time the KBS symptomatology in young children who had no environmental learning of sex. He hypothesized that psychic blindness manifests in young children as marked indifference towards the parents. Placidity would manifest as easy mix-up of these children with strangers. As expected from young children, hyper-orality was the most prominent feature. Hypersexuality manifested as rhythmic hip movement, rubbing genitals over the bed and excessive manipulation of genitals with hands. Recognition of these symptoms was important to diagnose these children as having KBS.**[5]**

2) Hirayama Disease:

Hirayama disease predominantly affects male adolescents with progressive muscular weakness and atrophy of distal upper limbs, followed by spontaneous arrest within several years. Although it was known that there is tight dural canal and asymmetric atrophy of the cervical spinal cord, suggesting cervical pathology in this disease, the diagnosis was clinical and no confirmatory test was available to diagnose this disorder.
Pradhan and coworkers were the first to provide diagnostic MRI criteria for Hirayama disease that included features in neutral and completely flexed positions of neck. In neutral position there was atrophy of the lower cervical spinal cord with T2 hyper-intensities in anterior horn cell region. During neck flexion, there was forward displacement of the posterior cervical dural sac resulting in enhancing crescent shaped epidural space and forward displacement of spinal cord that gets flattened against the C5-C6 vertebral bodies. It was also suggested that selective anterior horn cell involvement could be related to local ischemia secondary to dynamic alterations in the cervical region.**[6]** Three years after the publication of this paper, Hirayama (in whose name this disease is eponymed) himself

published exactly similar findings without quoting Pradhan's original work (Hirayama K, Tokumaru Y. Cervical dural sac and spinal cord in juvenile muscular atrophy of distal upper extremity. Neurology 2000; 54: 1922-6). Pradhan responded with a correspondence claiming originality of his work which was duly acknowledged and he also reported for the first time the use of collar therapy (to prevent neck flexion) **[7]**, a modality that is till date the only treatment available for this disease apart from some anecdotal reports of surgical stabilization of neck. Pradhan's claim for the originality of this work also comes from the fact that the original observation from first 9 patients of Hirayama disease (named at that time as "Juvenile asymmetric segmental spinal muscular atrophy" were reported and presented at 1st International Conference on ODNS New Delhi – India on November 19-22, 1994.**[8]** There had been some attempts to downplay the diagnostic MRI findings reported by Pradhan and the latter had given the thoughtful rebuttal to the same.**[9]**

Since the initial description of Hirayama disease, the disease is known for its unilateral presentation. Hirayama himself described it in the beginning as "juvenile muscular atrophy of one upper extremity". Due to this reason Indian authors coined a new term to describe this disease as "Monomelic amyotrophy". Pradhan was the first person in the world to describe the fact that the disease is mostly bilateral but asymmetrical and the less affected limb is taken as normal as there is no limb left to compare with. He was also the first to describe bilaterally symmetrical form of the disease (which formed about 10% of his cases with MRI based confirmation) and highlighted the fact that these cases remain undiagnosed due to the wrong notion of unilateral affection of this disease.**[10]**

3) Central demyelinating diseases

a. Parainfectious myelitis: Parainfectious myelitis (PIM), a form of acute transverse myelitis (ATM) is now regarded as the spinal form of acute disseminated encephalomyelitis (ADEM). Several of the clinical features of PIM remained unexplained. Pradhan gave a new classification based on longitudinal extent of the disease. He initially described 3 clinico-imagiological forms of PIM such as parainfectious focal segmental myelitis (PIFSM), parainfectious disseminated myelitis (PIDM) and parainfectious ascending myelitis (PIAM) **[11]** and later added the fourth one i.e., parainfectious conus myelitis (PICM).**[12]**

Focal segmental myelitis explained the classical clinical features of acute transverse myelitis where transverse sensory level, radicular pains and lower motor neuron signs corresponded with the focal lesion somewhere in the middle of the cord and the long tract sensory-motor signs below the site of lesion. Several patients were found to have radicular pains, paresthesias, flaccid weakness or loss of deep tendon reflex in a dermatomal or myotomal distribution below or rarely above the transverse sensory level; Pradhan explained these phenomena by multiple discrete inflammatory lesions scattered in the spinal cord below or above the major lesion responsible for the transverse level and termed it disseminated myelitis (PIDM). Several patients of parainfectious myelitis have flaccid paralysis in the beginning and it is attributed to spinal shock but in several patients this flaccidity never returns back to spasticity and wasting of muscles ensues due to persistent lower motor neuron type weakness and flaccidity; Pradhan explained this phenomenon by using the term ascending myelitis (PIAM) and demonstrated involvement of anterior horn cells within the uniformly inflamed spinal cord from conus medullaris upwards up to the lesion responsible for transverse level.**[11]**

Later on, Pradhan discovered an unusual site for PIM at conus – epiconus region of the spinal cord and coined the term parainfectious conus myelitis (PICM) to denote this disease entity that presents with acute urinary retention and with no conventional signs of myelitis. Due to involvement of lower most part of the spinal cord these patients did not have upper motor

neuron signs. Several of them presented to urologists with isolated urinary symptoms and on examination a few showed altered sensations in sacral dermatomes which the patients themselves were often not aware of. Interestingly, MRI of several of these patients was normal in the conventional saggital plane (a situation where axial planes are never viewed) and it was only a careful search in the axial plane that the lesion was often found in one half of conus medullaris.**[12]**

b. Atypical central demyelinating disease: In the year 2004, Pradhan described 6 patients of an atypical central demyelinating disease who had features not fitting into any of the 3 well known central demyelinating diseases – multiple sclerosis, neuromyelitis optica and acute disseminated encephalomyelitis.**[13]** They had recurrent myelo-optic presentation with long spinal segment involvement, long duration of months to years between the recurrences and a fairly good outcome. Long spinal segment involvement with spinal swelling and absence of cerebral lesions were the features against the multiple sclerosis. Multiple recurrences all confined to spinal cord and optic nerves with no cerebral involvement at any stage were the features against the acute disseminated encephalomyelitis. The long gap of months to years between the recurrences of optic neuritis and myelitis, unilateral optic nerve involvement at a time and a relatively good outcome were the features against the then prevalent definition of neuromyelitis optica.**[13]** A year later, Pradhan presented his experience with 13 such patients at 18th World Congress of Neurology, Sydney, Australia, who had similar presentation but with additional solitary brain lesion in 3 and spill over from cervical cord lesion to brain stem in 5 of them.**[14]**

Later on, the definition of neuromyelitis optica was extended and Pradhan's cases fitted well into this new broadened definition based on the presence of anti-aquaporin-4 antibodies, a test that was not available at the time of Pradhan's reporting.

c. Intravenous Immunoglobulin (IVIg) therapy in Acute Disseminated Encephalomyelitis: Pradhan reported for the first time in the world literature the beneficial effect of IVIg therapy in Acute Disseminated Encephalomyelitis (ADEM). Four patients with fulminant ADEM including 2 on ventilator support who were non-responsive to methyl prednisolone therapy showed dramatic response to IVIg therapy.**[15]**

Now a day this mode of treatment is recommended in several textbooks of Neurology.

d. Central pontine myelinolysis:

i) CPM & Parkinsonism: Previously central pontine myelinolysis (CPM) used to be an autopsy diagnosis and the mild cases largely remained undiagnosed. With the advent of magnetic resonance imaging it became possible to diagnose these cases during life. Pradhan reported a case of central pontine and extra-pontine myelinolysis based on MR imaging and showed that the patient had Parkinsonian features during recovery which gradually vanished in about 9 months. He conjectured that with the resolution of pontine lesion during recovery, basal ganglia lesions start manifesting as Parkinsonism.**[16]** This paper was perhaps the first report of Parkinsonism during recovery from CPM but as it was published in the then un-indexed "Neurology India", it remains unquoted even though there are several reports of this kind now available in the world literature.

ii) CPM & correction of hyponatremia: Hyponatremia may cause central pontine myelinolysis (CPM) if corrected rapidly or by a large amount from a very low initial level to a normal or very high level. Pradhan reported for the first time that even when the hyponatremia is mild to moderate and the correction slow and small, myelinolysis may develop if the hyponatremia had been there for a considerably long duration.**[17]** With the help of 2 patients who were chronically hyponatremic on record, and who developed CPM under Pradhan's own care after judicious and documented slow correction of hyponatremia, he concluded that the then existing recommendation for correction of hyponatremia were perhaps too liberal (25 mmol/l over 48 hrs and 12 mmol/l over 24 hrs) and that

the patients who are predisposed to CPM with underlying pre-conditions such as malnutrition, chronic renal failure, other chronic debilitating and stressful conditions such as burns and septicemia (CRF in two cases described here), the rate of sodium correction should be still slower. This is because in chronic hyponatremia, brain cells gradually become isotonic to extracellular fluid and any attempt to correct it even judiciously, may be stressful to tightly cris-crossing myelinated fibers.**[17]** Subsequent to this paper, gradually the recommendations for correction of hyponatremia have become more stringent.

4) Epilepsy:

Pradhan's work in the field of epilepsy has led to the first ever description of 1 new epileptic symptom complex, 1 new reflex mode of epilepsy precipitation and elucidation of 1 new cause of seizure-intractability in neurocysticercosis.

a. Tickle-seizures: Pradhan described a new mode of seizure manifestation in the form of a sensory feeling of tickle along with its motor and psychic components manifesting as laughter.**[18]** The laughing (gilastic) epilepsy was already well known but a true feeling of tickle-sensation prior to laughter was never described before. The lesion (cysticercal cyst) was localized to trunk area of somatic sensory cortex and the symptom complex was explained by the development of seizure circuitry involving limbic and hypothalamic areas.**[18]**

b. Micturition induced reflex epilepsy: Pradhan also described a new mode of reflex seizure precipitation following the act of micturition.**[19]** The phenomenon could be differentiated from complicated micturition syncope by precipitation even in sitting posture of passing urine and by post-ictal electroencephalographic abnormalities.

c. Seizure intractability due to perilesional gliosis in neurocysticercosis (NCC): Pradhan's co-workers involved in neuro-imaging demonstrated peri-lesional gliosis around cysticercal cyst in the brain in a case with "difficult to treat" epilepsy, using magnetization transfer imaging sequence and correlating it with conventional sequences (Gupta RK, Kathuria MK, **Pradhan S**. Magnetization transfer magnetic resonance imaging demonstration of perilesional gliosis – relation with epilepsy in treated and healed neurocysticercosis. **The Lancet** 1999; 354 (July 3): 44-45). Based on this observation Pradhan selected 108 patients with single NCC in the brain and correlated seizure outcome in patients with and without peri-lesional gliosis and found much higher seizure intractability in those who developed gliosis suggesting peri-lesional gliosis playing a role in the development of epileptic focus in patients with NCC who, without gliosis, generally have only "acute symptomatic seizures".**[20]**

This paper published in "Annals of Neurology" was included in the "Epilepsy Monitor" edited by some of the world authorities in epilepsy.**[21]**

d. Intermittent minor symptoms in epileptic patients with neurocysticercosis: Pradhan described for the first time persistence of some annoying minor symptoms in patients with neurocysticercosis (NCC). The symptoms which were transient episodic in nature included heaviness, dystonic posturing, weightlessness, numbness and alien limb phenomenon contra lateral to the side of lesion and headache. **[22]** As these symptoms were observed mainly in those patients who had peri-lesional gliosis on MR imaging, it was conjectured that bizarre electrical activity in this abnormal glia may be responsible for these symptoms as these got controlled with increased dose of prescribed anti-epileptic drugs.

Preliminary works on these subjects were presented in 17th and 18th World Congress of Neurology **[23, 24]** and at6th European Congress of Epileptology, Vienna, Austria, 2004.**[25]** Based on the above two papers on NCC, Pradhan was invited and sponsored to deliver

lecture on "Neurocysticercosis and other Infective causes of Epilepsy" in the session "Prevention of Epilepsy" at 5th Asian and Oceanian Epilepsy Congress, Bangkok, Thailand, 28th – 31st August 2004.**[26]**

5) Tuberous Sclerosis (TS):

Several neuro-ophthalmological manifestations are known to occur in TS which are essentially due to the restricted proliferation of polymorphous astrocytic glial cells. These generally form phakomatous "tumors" in brain and eye. Although large sheet-like phakomas causing opacity of vessels underlying the sheet was described in the literature as a rare finding, Pradhan described a new finding of selective pipe-stem sheathing of the retinal vessels due to selective glial proliferation along the vessels.**[27]**

6)Acute Endosulfan Poisoning:

Except for convulsions, altered consciousness and non-specific EEG changes, precise neurotoxicity of Endosulfan exposure was not known. Through a case of failed suicide attempt by a female who consumed considerable amount of Endosulfan, Pradhan showed for the first time that this pesticide may cause selective involvement of basal ganglia and occipital cortex with corresponding extrapyramidal signs and cortical blindness which is reversible. As Huntington's disease and MELAS syndrome are also known to involve basal ganglia and occipital cortex, it was hypothesized that Endosulfan may be acting by causing dysfunction of mitochondria.**[28]**

7) Muscular Dystrophy:

Dr. Sunil Pradhan has a unique distinction of discovering **5** new clinical signs in Neurology that were reported for the first time in reputed international journals. This is important because most of the world scientists who could do so, have described only 1 clinical sign in their life-time. These signs are specific to, and are helpful in the diagnosis of 5 different muscle diseases just by looking at them in a specific body posture. As no sophisticated test is required, these discoveries are most suited for application on poor patients. These signs are:

I. **"Valley sign"** in Duchenne muscular dystrophy (Published in the journal "Pediatric Neurology", USA).**[29]**
II. **"Poly-hill sign"** in facioscapulohumeral dystrophy (Published in the journal "Muscle & Nerve", USA).**[30]**
III. **"Shank sign"** in myotonic dystrophy (Published in Journal of Clinical Neurosciences, Australia).**[31]**
IV. **"Calf-head sign"** in Miyoshi Myopathy (Published in the journal "Archives of Neurology", USA).**[32]**
V. **"Diamond on quadriceps sign"** in dysferlinopathy (Published in "Neurology" 'Green Journal', USA).**[33]**

The valley sign has been proposed to be called **"Pradhan Sign"** by the President of the American Board of Pediatrics as mentioned in the "Year Book of Pediatrics 1996" **[34]** and has been acknowledged by Indian Council of Medical Research in its citation of *Dr. H. B. Dingley memorial award* of the "***Indian Council of Medical Research (ICMR)***" that was conferred on Dr. Pradhan for the year 1994.**[35]**To look for the specificity of valley sign, Pradhan examined the patients of other forms of muscular dystrophy in the similar posture as adopted for valley sign. He found a very peculiar appearance around the shoulder girdle in patients with Facio-scapulo-humeral dystrophy, which he termed as "Poly-hill sign" because

of the 4 bulges each separated by a trough on either side (Muscle & Nerve, 2002). **[30]** He has been invited twice at the expense of Marion Society – Oxford Muscle Symposium, Oxford, UK; once in 1999 to demonstrate his "valley sign" in Duchenne Muscular dystrophy **[36]** and at other time in 2002 to show his "poly-hill sign" in facioscapulohumeral dystrophy.**[37]**

For last 20 years, Pradhan is continuously involved in clinical research on muscular dystrophy. His initial clinical observations stretching over a span of 5 years (1989-1994), indicated morphometric peculiarities around the shoulder girdle that showed-up only when the muscle around the shoulder were in action. Though the enlargement and wasting of specific muscles were already known, he showed for the first time that in muscular dystrophy, some muscle may exhibit enlargement of one part and wasting of another part (Clin Neurol Neurosurg, 1995).**[38]**Based on these initial observations he discovered a new clinical sign in Duchenne muscular dystrophy called "valley sign" (Pediatr Neurol, 1994). **[29]** Though initially thought to be specific for this disorder, it was also observed later to be present in a subtle manner in genetically similar but adult form of this disease called Becker muscular dystrophy and also in out-liars of Duchenne/Becker muscular dystrophy (Neurol India,2004).**[39]** The importance of this sign lay in the fact that it could be demonstrated nicely even in the late chair-bound stage of the disease when more classical signs such as calf muscle enlargement had disappeared and Gowers' sign could not be tested (Neurol India,2002).**[40]** This utility of new clinical sign in DMD patients was presented in Buenos Aires, Argentina in 1997 **[40a].**

Pradhan is also involved in rehabilitative and palliative treatments in muscular dystrophy and in this respect he has evolved a method of judicious use of corticosteroids (essentially concerned with the stage of the disease at which to start steroids and at what dose) that may provide nearly 3 more years of ambulation to 50% of the patients with Duchenne muscular dystrophy.**[41]**

For his research work on muscular dystrophy Pradhan received Amrut Mody Unichem *award of* ***Indian Council of Medical Research***for the year 2007.**[42]**

8) Clinical neurophysiology:

Dr. Pradhan invented a new technique for the **electrophysiological study of the intercostal nerves**. Before this there existed no non-invasive surface technique to study the intercostals nerves. Published first in the Journal of Neurology, Neurosurgery & Psychiatry, UK, **[43]** the study is subsequently included in several of the international books on this subject and is quoted as **"Pradhan's method"** in one of the books published from USA.**[44]** Subsequently Pradhan presented work on its utility in respiratory dysfunction in Guillain Barre Syndrome at VIIth International Congress on Neuromuscular diseases. Sept. 16-22,1990, Munich, Germany **[44a]**. He also developed and standardized the technique of recording somatosensory evoked potential over the scalp after the stimulation of intercostals nerves and showed its utility in the localization of spinal cord lesions.**[45]**

He also described **new mechanisms of electrophysiological F-response generation** using self-designed experiments. Normal F response is a proximal rebound response from fast conducting motor nerve fibers. Through this paper he showed that the delay in the F-response (which was known to denotes delayed conduction in the proximal segment of the fast conducting motor nerve fibers) was in fact, due to loss of early components of F response (i.e., no rebound conduction in fast conducting large fibers) and appearance of late components from slow conducting fibers. These late components never participate in the

generation of normal F response but appear after the loss of fast components. This meant that what appears to be a delayed conduction is actually an absent participation by fast fibers and de-novo participation by otherwise non-participating slow fibers.**[46]** With the help of other experiments he showed that constantly changing morphology of F response is due to constant participation by some motor nerve fibers with superimposed irregular participation by other motor fibers. He further showed a kind of rotation of participating alpha motor neurons at different time intervals suggesting nature's way to provide rest for rejuvenation to its elements during apparent continuous activity. **[46, 47, 47a]**

Four parameters are studied for F response abnormality. These are F-minimal latency, F-persistence, F-dispersion and F/M ratio. Pradhan discovered fifth parameter that is F-multiplicity which, when present, was always indicative of lower motor neuron disorder particularly anterior horn cell disease. Multiple F response was most frequently observed in patients with old poliomyelitis.**[48, 49]**

H-reflex provides good status of the proximal segment of sensory motor nerve. In adult human beings however, H-reflex can only be elicited over the solius and Gastrocnemius muscles. In other muscles it appears on voluntary contraction of the same muscle, but remains buried in the muscle activity. Taking advantage of the fixed latency of H-reflex, Pradhan averaged several responses over contracting Tibialis anterior muscle, time-locked to the given electrical stimulation that cancelled random muscle activity and made H response stand out clearly. Terming it Tibialis anterior R-1 response (TAR-1), he showed its utility in L4-L5 spinal root lesions.**[50]** The preliminary work on this subject was presented in the 14th World Congress of Neurology, New Delhi, 1989.**[50a]** Subsequently, German authors compared this technique with other existing techniques to study the L4-L5 spinal roots such as EMG and direct electrical stimulation of the roots, and found TAR-1 to be superior to all others. **[51]**

For his research work on clinical neurophysiology he received*Shakuntala Amirchand award of* ***Indian Council of Medical Research***for the year 1996.**[52]**

9) Nuclear Magnetic Resonance studies on biological extracts:

As a thesis guide Pradhan tried to find out specific bio-markers for the diagnosis of different muscle diseases using proton NMR based analysis of human serum and homogenate derived from muscle biopsy tissue and brain tissue. During standardization of the process, a new lipid extraction technique was invented by using different permutations and combinations of the currently used technique. The new technique yielded nearly 30% more lipids compared to the existing technique and corrective equations were developed to determine the true yield of lipids even when these got partially destroyed by perchloric acid during extraction of water soluble substances from the same tissue. Some significant markers were found for Duchenne muscular dystrophy and brain tumors. Following **5** papers were published by Pradhan ***(as a second and corresponding author)*** on this subject. (In these research works actual lab work was done by the first author and Pradhan was involved in conceptualization of idea, selection of patients, analysis of results, and writing of discussion). These papers (not attached with this document) are as follows:

1. Srivastava NK, **Pradhan S***, Mittal B, Kumar R, Nagana Gowda GA. An improved single step standardized method of lipid extraction from human skeletal muscle tissue.Analytical Letters 2006; 39: 297-315.
2. Srivastava NK,**Pradhan S***, Mittal B, Raj Kumar, Pandey CM and Nagana Gowda G.A. Novel corrective equations for complete estimation of human tissue lipids following their partial

destruction by PCA pre-treatment: High-resolution ^{1}H-NMR based study. NMR in Biomedicine. 2008: 21; 89-100.

3. Srivastava NK, **Pradhan S***, Mittal B, Roy R. High resolution NMR based analysis of serum lipids in Duchenne Muscular Dystrophy patients and its possible diagnostic significance (Proceedings of the *ISMRM: International Society for Magnetic Resonance in Medicine, 2008.*
4. Srivastava NK, **Pradhan S**, Mittal B, Gowda GA, Roy R, Khetrapal CL. High resolution NMR based analysis of serum lipids in Duchenne Muscular Dystrophy patients of Northern India and its possible diagnostic significance. NMR Biomed 2010;23: 13-22.
5. Srivastava NK, **Pradhan S**, Gowda GA, Kumar R. In vitro, a high-resolution 1H & 31P NMR based analysis of the lipid components in the tissue, serum and CSF of the patients with primary brain tumors: one possible diagnostic view. NMR Biomed 2010; 23: 113-122.

10) Genetics of Dementia:

In patients with dementia, in collaboration with geneticist Prof. B. Mittal, **Pradhan guided the thesis on** study of various polymorphic genes in degenerative and vascular dementia. Some association was found between presenilin, LRPAP1, ACE, MTHFR and APO-E genes and different types of dementia and the results were published (***as second and corresponding author***) in appropriate journals listed below. (In these research works actual lab work was done by the first author and Pradhan was involved in conceptualization of idea, selection of patients, analysis of results, and writing of discussion). These papers (not attached with this document) are as follows:

1. Pandey P. **Pradhan S***, Mittal B. Presenilin gene predisposes for degenerative but not vascular dementia: a North Indian population based study. Dement Geriatr Cogn Disord. 2007; 24: 151-161.
2. Pandey P, **Pradhan S***, Mittal B. LRP-associated protein gene (LRPAP1) and susceptibility to degenerative dementia. Genes Brain Behav. 2008; 7: 943-950.
3. Pandey P, **Pradhan S**, Modi DR, Mittal D. MTHFR and ACE gene polymorphisms and risk of vascular and degenerative dementias in the elderly. Brain and Cognition 2009; 71: 295-299.

Dr. Pradhan's scientific and academic work is recognized by 3 national academies by conferring fellowship. He is the fellow of National Academy of Medical Sciences, New Delhi (FAMS) ***[53]****, National Academy of Sciences, Allahabad (FNASc)* ***[54]*** *and Indian College of Physicians, Mumbai (FICP)* ***[55]****.*

For the overall research activities in the field of Neurology Dr. Pradhan received ***highest Science Awards of the State*** *of Uttar Pradesh "Vigyan Ratna"* ***[56]*** *and "Vigyan Gaurav"* ***[57]*** *conferred by the Council of Science & Technology,Uttar Pradesh.*

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53 Fellowship of *National Academy of Medical Sciences*, New Delhi (FAMS) conferred on Dr. Sunil Pradhan during the Annual conference of *National Academy of Medical Sciences* at Hyderabad, 2006.

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55 Fellowship of Indian College of Physicians, Mumbai (FICP) conferred on Dr. Sunil Pradhan during the Annual conference of Association of Physicians of India, Bangalore, 2004

56 Citation of Vigyan Ratna Award (2003 - 4) of Council of Science & Technology, Uttar Pradesh, conferred on Dr. Sunil Pradhan at Award Ceremony, CMS Auditorium, Gomti Nagar, Lucknow, 2004.

57 Citation of Vigyan Gaurav Award (2003 - 4) of Council of Science & Technology, Uttar Pradesh, conferred on Dr. Sunil Pradhan at Award Ceremony, CV Raman Auditorium, Suraj Kund Park, Lucknow, 2004.

Certified that the facts given in this document are true to the best of my knowledge and are provided along with the appropriate evidence.

(Sunil Pradhan)