

## CLINICAL PROFILES OF PERIPARTUM NEURODEFICIT

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### Summary

*To find out the clinical profiles of peripartum neurodeficit, a prospective observational study in 23 patients was conducted from 1<sup>st</sup> July 2008 to 31<sup>st</sup> June 2009 in the department of Physical Medicine, Chittagong Medical College. Presenting neurological findings and FIM scores for self-care, sphincter control, transfer and locomotion were measured. Ambulation of the patients was paretic and dependent. Paralyzed body parts were mainly both lower limbs (69.6%). Disability pattern was mainly in walking (82.6%). Reflexes of most of the patients and mostly lower limbs were affected. Muscle power was reduced in the lower limbs in 100% and in the upper limbs in 40% of the patients. Neurological profiles are measured with functional independence measure (FIM) scale. Normal FIM scores are of self-care-42, sphincter control-14, transfer-21 and locomotion-14 and combined score is 91. In the observed patients, FIM scores of self-care were; minimum 9 to maximum 21, sphincter control 2 to 5, transfer 3 to 9, locomotion 2 to 5. Combined total FIM score was found minimum 16 to maximum 49 and mean  $36.70 \pm 11.60$  out of normal score 91. From this study it may be concluded that peripartum neurodeficit may cause various neurological disabilities.*

### Key words

Peripartum neurodeficits; Functional Independence Measure (FIM); Disability.

### Introduction

Peripartum neurodeficit may be defined as the neurological impairment during the period from the last trimester of pregnancy to the end of sixth week after delivery. It is also known as peripartum paralysis. Peripartum paralysis is not an uncommon disease. Pregnant women can present with a wide variety of neurological conditions [1,2].

The range of neurological conditions affecting women of reproductive age is extremely broad [1]. Diagnosis of peripartum paralysis yet not established, but probably it may be due to acute inflammatory demyelinating polyneuropathy (AIDP) [1]. AIDP has been reported during all the three trimesters of pregnancy and in the post-partum period [3]. It is known to worsen the disease during the post-partum period due to a rapid increase in delayed type hypersensitivity. Though the incidence of AIDP in pregnancy is similar to that in the normal population, Yamada et al. reported only 50 cases of AIDP during pregnancy [4,5]. Relapse during successive pregnancies has been reported. The occurrence of the disease in the third trimester presents a high maternal risk because of respiratory complications and risk of premature delivery [6]. Goyal et. al. successfully managed a patient of AIDP during pregnancy that showed remarkable recovery following delivery [7]. Gupta et. al. found that the incidence of neurological disorders in pregnancy and puerperium was fairly high, 584 per 100,000 deliveries [2]. Variation in incidence is found in pregnant and postpartum women. According to a Swedish epidemiologic study, the incidence appears to be lower during pregnancy with an increase in the months immediately after delivery [8].

The protection of the expectant mother and her child is of prime importance for a sound and healthy nation. "Safe Motherhood" is now a burning question in all over the world. World Health Organization has given top most priority in maternal and child health. It was observed that some patients suffering from prepartum and post-partum neurodeficit were attending in the department for treatment. The main presenting features include widespread motor disturbances causing para-paresis to paraplegia, even quadraparesis. There is a little available medical literature to guide the physicians to diagnose and manage these patients. So, to determine the diagnosis and socio-demographic status of these patients and to identify existing disease burden, this study may help to make plans to improve reproductive health.

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### Materials & methods

This observational study was conducted in the Department of Physical Medicine and Rehabilitation of Chittagong Medical College Hospital, from 1<sup>st</sup> July 2008 to 31<sup>st</sup> June 2009. The patients attended in the department with the complaints of paresis or paralysis from last week of pregnancy to post partum period, were included in the study. Informed consent was taken from all the participants. Presenting clinical neurological findings, muscle power and functional disability of the patients were recorded and Functional Independence Measures (FIM) scores for self-care, sphincter control, transfers and locomotion were measured in a prepared check list [9]. Possible available investigations were done, but no conclusive diagnostic results were obtained. Imaging study and neuro-diagnostic tests were not done because of unavailability and cost burden. The data were analysed with the help of SPSS package program (version 15.0). The results were expressed as percentage and frequency.

### Results

Total 23 patients with peripartum neurodeficit were recorded during the study period. The age of the patients was from 17 to 45 years with a mean of  $27.48 \pm 7.20$  years. All the patients were housewives. The majority of participants were rural (78.3%) and poor (60.9%) (Table I). The onset of disease was mainly post-partum; within first week 60.8%, second week 26.1%, beyond second week 8.7% and prepartum 4.3%. The patients from 1<sup>st</sup> through 6<sup>th</sup> gravida were, 34.8%, 8.7%, 34.8%, 4.3%, 8.7%, and 8.7% respectively. Associated conditions were, pre-eclamptic toxemia (PET) 26.1%, hypertension (HTN) 8.7%, eclampsia 4.3%, lower segment Caesarian section (LSCS) 8.7%, and none 52.2%. Anaemia was found mild in 43.5%, moderate 21.7% and severe 4.3% of patient. Oedema was present mildly in 47.8%, moderately in 8.7% and absent in 43.5%. Ambulation of the patients was paretic in 17.4%, on wheel chair 56.5% and on trolley 26.1%. Neurodeficits were found in lower limbs in 69.6%, all limbs in 26.1%. Bladder functions were normal in 73.9%, on catheter in 13%, and dribbling incontinence in 13%. Reflexes (Table II) showed planter reflex normally flexor in all the patients, of both knees absent in 47.8%, diminished in 47.8%, and in ankles absent in 47.8%, diminished in 43.5%, and in the biceps and triceps were normal in 60.9%

of the patients. Sensations were intact in 78.3%. Muscle power (Table III) of lower limbs; 8.7% grade 0/5, 13% grade 1/5, 21.7% grade 2/5, 47.8% grade 3/5, 8.7% grade 4/5 and none in grade 5/5 and in the upper limbs; none in grade 0/5 to 2/5, 21.7% grade 3/5, 17.4% grade 4/5 and 60.9% grade 5/5. Functional disability (Table IV) in ambulation was found paretic in 4 (17.4%), on wheel chair 13 (56.5%) and on trolley 6 (26.1%). Disability involving the parts of the body was found in both lower limbs 16 (69.6%), all limbs 6 (26.1%) and 1 (4.3%) single dropped foot. FIM scores (Table V) of self-care were; minimum 9 to maximum 21 and mean  $16.30 \pm 3.94$  out of normal 42, of sphincter control was minimum 2 to maximum 5 and means  $11.04 \pm 5.09$  out of 14, of transfer minimum 3 to maximum 9 and mean  $6.00 \pm 2.52$  out of 21, of locomotion minimum 2 to maximum 5 and mean  $3.43 \pm 1.34$  out of 14. Combined total FIM score was found minimum 16 to maximum 49 and mean  $36.70 \pm 11.60$  out of normal score 91.

**Table I : Sociodemographic Profile**

Characteristics	Group	Frequency	Percentage
Income group	Poor	14	78.3
	Middle	9	21.7
	Total	23	100
Habitat	Rural	18	69.9
	Urban	5	30.1
	Total	23	100
Period of onset of paralysis	Within 1 <sup>st</sup> wk	15	60.8
	Within 2 <sup>nd</sup> wk	6	26.1
	beyond 2 <sup>nd</sup> wk	2	8.7
	Pre-partum	1	4.3
	Total	23	100
Number of gravida	First gravida	8	34.8
	Second gravida	2	8.7
	Third gravida	8	34.8
	Fourth gravida	1	4.3
	Fifth gravida	2	8.7
	Sixth gravida	2	8.7
Total	23	100	
Associated condition	Pre-eclampsia	6	26.1
	Hypertension	2	8.7
	Caesarian section	2	8.7
	Eclampsia	1	4.3
	None	12	52.2
	Total	23	100

**Table II :** Frequency of Reflexes (n=23)

Reflexes		Normal % (Frequency)	Absent % (Frequency)	Weak % (Frequency)
Planter (both)		100 (23)		
Ankle	Right	8.7 (2)	47.8 (11)	43.5 (10)
	Left	8.7 (2)	43.5 (10)	47.8 (11)
Knee Right		4.3 (1)	47.8 (11)	47.8 (11)
	Left	4.3 (1)	43.5 (10)	52.2 (12)
Biceps	Right	60.9 (14)	8.7 (2)	30.4 (7)
	Left	60.9 (14)	8.7 (2)	30.4 (7)
Triceps	Right	60.9 (14)	8.7 (2)	30.4 (7)
	Left	60.9 (14)	8.7 (2)	30.4 (7)

**Table III :** Muscle Power (n=23)

Muscle power	0/5 in %(frequency)	1/5 in %(frequency)	2/5 in %(frequency)	3/5 in %(frequency)	4/5 in %(frequency)	5/5 in %(frequency)
RLL	8.7 (2)	13 (3)	21.7 (5)	47.8 (11)	8.7 (2)	0
LLL	8.7 (2)	13 (3)	21.7 (5)	47.8 (11)	8.7 (2)	0
RUL	0	0	0	21.7 (5)	17.4 (4)	60.9 (14)
LUL	0	0	0	21.7 (5)	17.4 (4)	60.9 (14)

RLL=Right lower limb, LLL=Left lower limb,  
RUL= Right upper limb, LUL= Left upper limb

**Table IV :** Frequency of Functional Disability (n=23)

Disability Pattern	Number of Frequency & (%)
<b>Ambulation</b>	
Wheel chair	13 (56.5)
On Trolley	6 (26.1)
Paretic gait	4 (17.4)
<b>Pattern of Paralysis</b>	
Both lower limbs	16 (69.6)
All limbs	6 (26.1)
Dropped foot	1 (4.3)
<b>Bladder Function</b>	
Normal	17 (73.9)
On catheter	3 (13)
Dribbling	3 (13)

**Table V :** FIM Scores (n=23)

FIM scores of	Normal	Minimum	Maximum	Mean wit SD
Self-care	42	9.00	21.00	16.30 ± 3.94
Sphincter control	14 2.00	14.00	11.04	± 5.09
Transfer	21	3.00	9.00	6.00 ± 2.52
Locomotion	14	2.00	5.00	3.43 ± 1.34
Combined score	91	16.00	49.00	36.70 ± 11.60

## Discussions

Total 23 patients of peripartum neurodeficit were studied in this study. The patients from 17-45 years of age were found to suffer from peripartum neurodeficit. In a study by Ismael et.al., found that women of 28-41 years of age were suffering from the disease [10]. All the patients in this study were housewives. In this study majority of the patients were rural (78.3%) and poor (60.9%). Most of the patients presented with the onset of disease within the first week (60.8%) and within second week (26.1%) of puerperium, some patients presented the onset of disease after second week 8.7% and one (4.3%) patient at pre-partum period. The patients with peri-partum paralysis were found from 1<sup>st</sup> through 6<sup>th</sup> gravida with most (69.6%) of the patients in 1<sup>st</sup> and 3<sup>rd</sup> gravida. Associated disease conditions with peri-partum paralysis were found, pre-eclamptic toxemia (26.1%), hypertension (8.7%), eclampsia 4.3%, lower segment Caesarian section (8.7%), and 52.2% without associated condition. Gupta et.al. found that the primary neurological disorders in relation to pregnancy include eclampsia, strokes, epilepsy, benign intracranial hypertension, CNS tumours, Bell's palsy, obstetric pressure palsies, demyelinating diseases of the central or peripheral nervous system and neuromuscular junction disorders. Neurological diseases may be incidental to pregnancy and a variety of disorders may be encountered during pregnancy and puerperium, which may be unrelated to the pregnant state[2]. Majority of the patients were found anaemic with mild to moderate oedema. Ambulation of most of the patients was dependent. Most of the patients were suffering from paralysis of lower limbs, though other sites might involve. Muscle power was reduced from grade 4 to zero in the lower limbs and grade 3 to 4 in the upper limbs. Bladder function was intact in most (73.9%) of the patients and other 26.1% affected whom were managed with indwelling catheter. Ismael et.al, found that all of the 19 patients presented with urinary complications [10]. Clifton found in his study that there was no sensory impairment or bladder and bowel involvement [6]. Reflexes of most of the patients mainly in the lower limbs were impaired and planter reflex was found normally flexor in all the patients. Reflexes in the biceps and triceps were normal in majority of the patients and in some of patients it was impaired. No matching was found in this regard to compare the results. Powers of both lower limb muscles were affected in all the patients and were unable to walk and in the upper limbs it was unaffected in majority of patients. Sensations of

the patients were mostly (78.3%) intact. Ismael et. al, found no association in lower limb sensory or motor deficits in their study [10]. Cranial nerves were examined and found no abnormality in the patients under this study. To find the neurological profiles of the patients in this study presenting Functional Independence Measures (FIM) score for self-care, sphincter control, transfers and locomotion were measured [9]. It was found that all the measured functions were decreased in all the patients and the disabilities developed accordingly. FIM provides a uniform system of measurement for disability based on the International Classification of Impairment, Disabilities and Handicaps; measures the level of a patient's disability and indicates how much assistance is required for the individual to carry out activities of daily living. It contains 18 items composed of 13 motor tasks and 5 cognitive tasks considered basic activities of daily living. In this study we considered only the 13 motor tasks to evaluate neurodeficits of the patients. No cognitive deficits were observed in this study patients. Tasks were rated on a 7 point ordinal scale that ranges from total assistance or complete dependence to complete independence ranging from total lowest 13 to 91 highest scores. Several different scores can be obtained from the FIM: a total score (sum of all the scales), individual scale scores, and a physical and cognitive score (a two-dimensional interpretation). Research has shown that FIM data can have multidimensional components [11].

#### Limitations

In this study, pathological examinations helped a little. No CT scan, MRI imaging and electrodiagnosis was done due to poor socio-economic conditions of the patients and unavailability of the facilities.

#### Conclusions

From this study it may be concluded that the patients with peri-partum neurodeficits may present with various types of neurological disabilities. Further study with larger sample and different population should be done to evaluate the causes and appropriate measure can be done for diagnosis and management.

#### Disclosure

All the authors declared no competing interest.

#### References

1. To WK, Cheung RTF. Neurological disorders in pregnancy. HKMJ. 1997; 3:400-408.
2. Gupta S, Rohatgi A, Sharma SK, Gurtoo A. A study of neurological disorders during pregnancy and puerperium. Ann Indian Acad Neurol. 2006; 9:152-157.
3. Zeeman GG. A case of acute inflammatory demyelinating polyradiculoneuropathy in early pregnancy. Am J Perinatol. 2001; 18:213-215.
4. D'Ambrosio G, De Angelis G. Syndrome de Guillain-Barre au cours de la grossesse. Ren Neurol (Paris). 1985;141:33.
5. Yamada H, Noro N, Kato ME. Massive IV Immunoglobulin in pregnancy complicated by GB. Syndrome. Euro J Obs & Gynae & Reproductive Bio. 2001; 97:101-104.
6. Clifton ER. Gullien Barry syndrome, pregnancy & plasmapheresis. J Am Osteopath Assoc. 1992; 92:1279-1282.
7. Goyal V, Misra BK, Singh S, Prasad K, Behari M. Acute inflammatory demyelinating polyneuropathy in patients with pregnancy. Neurol India. 2004; 52:283-284.
8. Granger CV, Black T, Braun SL. Quality and outcome measures in Medical Rehabilitation. In: Braddom RL (edit), Physical Medicine & Rehabilitation. Elsevier Saunders. 2007; 8: 151-164.
9. Newswanger DL, Warren CR. Guillain-Barré Syndrome. Am Fam Physician. 2004; 15;69(10):2405-2410.
10. Ismael SS, Amarenco G, Bayle B, Kerdraon J. Postpartum lumbosacral plexopathy limited to autonomic and perineal manifestations: clinical and electrophysiological study of 19 patients. Neurol Neurosurg Psychiatry. 2000; 68:771-773.
11. Cavanagh SJ, Hogan K, Gordon V, Fairfax J. Stroke-specific FIM models in an urban population. J Neurosci Nurs. 2000;32(1):17-21.