

The Outcome of Early and Intensive Inpatient Rehabilitation of Paraplegic Patient Following Meningioma Resection Complicated with Post Surgery Contralateral Intracerebral Haemorrhage

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Abstract

Aim: This study was conducted to compare the outcome of an early and intensive inpatient rehabilitation of paraplegic patient both sides, the side that affected by brain tumour excision and the side that affected by haemorrhage lesion.

Methodology: The patient was a 43-year-old woman presenting with right parasagittal meningioma attached to the posterior third of the superior sagittal sinus (SSS) and complicated with post-surgery contralateral intracerebral haemorrhage. After that, patient developed a complete paraplegia. She received 8 weeks of intensive inpatient rehabilitation and the intervention was reviewed in 4th week post-surgery and in the 8th week at the time of discharge.

Results: The outcome was variable comparing to the both sides. In the 4th week post-surgery, the body side affected by tumour resection improved with muscles power graded against gravity as follows: hip flexor was 1/5 improved to 3/5, hip adductor was 2-/5 improved to 3/5, hip extensor was 1/5 improved to 3+/5, hip abductor was 0/5 improved to 3-/5, knee flexor was 1/5 improved to 3/5, knee extensor was 1/5 improved to 4-/5, ankle dorsiflexors and plantar flexors were 0/5 improved to 3/5 while the side affected with haemorrhage lesion exhibited slower recovery with muscles power graded with gravity elimination except hip extensor and knee extensor which improved to 3/5, the muscles power as follows: hip flexor was 1/5 improved to 2+/5, hip abductor was 0/5 improved to 2-/5, hip adductor was 2-/5 improved to 2/5, knee flexor was 1/5 improved to 2/5, ankle dorsiflexor was 0/5 improved to 2-/5 and ankle plantar flexor was 0/5 improved to 2/5. In the 8th week at the time of discharge, there were no significant differences in muscles power of both sides except the hip extensors and abductors and knee extensors muscles which found to have minimum differences.

Conclusion: This case report is consistent with previous studies that proven brain tumour patient can achieve a good functional outcome and have short rehabilitation length of stay than stroke patient.

Keywords: Meningioma; Paraplegia; Stroke; Rehabilitation

Introduction

Most survivors from stroke attack experienced a remaining disability long time after the attack and have decreased in quality of their life [1]. In other hand, brain tumour patients achieved a good functional recovery after the excision of the tumour and are more satisfied in their life [2]. One patient may experience both events in his brain at the same time with both legs affected. The importance of early and intensive inpatient rehabilitation is very clear to have a good functional outcome later in life and to decrease the hospital length of stay for both stroke and brain tumour excision patients and for patient affected with both [3-6].

Case Presentation

A 43-year-old woman presented to our hospital with history of headache and recurrent left side numbness and abnormal sensation with jerky movement of left hip and shoulder for two years before. Two

weeks before admission in the hospital, she was suffered from an attack of sudden loss of ability to move her left side of the body and she fell to the floor with brief loss of consciousness. She was taken by ambulance to a local hospital where she remained for two days and then was transferred to our hospital for further management and investigations. A magnetic resonance imaging (MRI) with contrast was done and revealed a right parasagittal meningioma attached to the posterior third of the superior sagittal sinus (SSS) measuring 2.9 × 2.2 × 3.8 cm (Figure 1). On the 9th day after admission, the right parasagittal meningioma resection was performed, and the surgery involved removing the meningioma off the sagittal sinus and then after investigation the tumour was found to be a Grade 1 benign tumour. Six hours after the surgery, she developed a sever weakness in the right leg. A computerized tomography (CT) scan revealed an acute focal parenchymal haemorrhage in the left frontal parasagittal region measuring 2.8 × 3.4 × 1.3 cm (Figure 2). Immediately after that the patient developed a complete paraplegia and she was managed conservatively and enrolled in an intensive inpatient rehabilitation program.

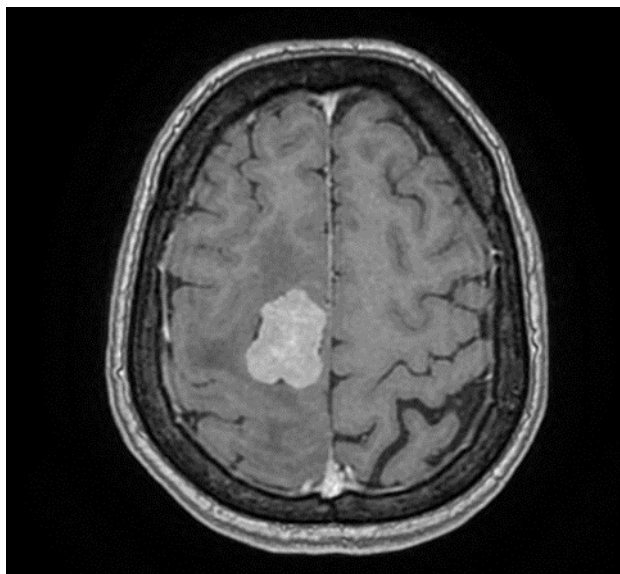


Figure 1: MRI brain (T1 image).

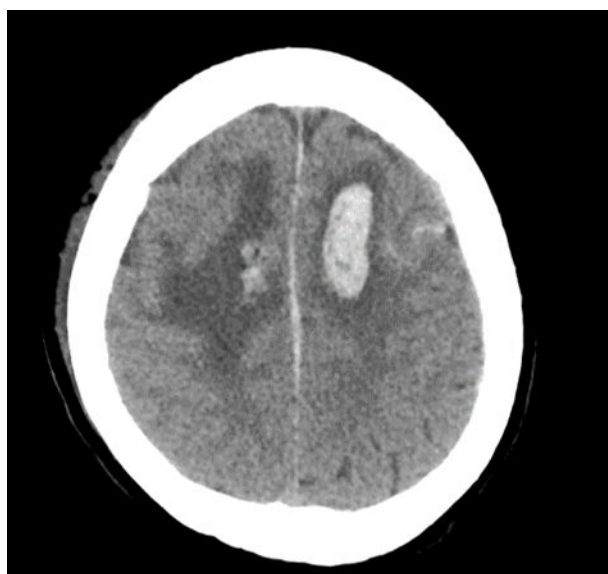


Figure 2: CT brain-Post-op Day 1.

Clinical Examination

In the initial evaluation, both superficial sensation of pain, temperature and light touch and deep sensation of lower limb proprioception were intact of both sides. Muscles tone of both lower limb quads, hams and hip abductors were 3/4 on ashworth scale with positive clonus test on left ankle. Medical Research Council (MRC) was used for patient's motor power assessment throughout the program in inpatient neurorehabilitation unit. 1st day after the surgery the motor power of both lower limb muscles were equally graded (Table1). The assessment was reviewed in the 4th week after the surgery and in the 8th week at the time of discharge.

Treatment Plan

Rehabilitation intervention started on the second day post-surgery. Prescription of bilateral foot night splint was the first intervention to prevent future complications. Patient had eight weeks of inpatient rehabilitation which consisted of two hours of daily therapy session and repeating the exercises two times for the rest of the day with her family. At the beginning the program included of lower limb strengthening exercises, quad set, hip flexors static strengthening exercises, quad short arc, hamstring strengthening exercises, hip abductors and adductors strengthening exercises, pelvic bridging, hip extensors strengthening exercises and sitting balance training which lasted four weeks. After that, the patient showed marked improvement in the left side which represents the side affected by the tumour resection surgery with muscles power graded against gravity and exhibited slower recovery for the right limb with muscles power graded with gravity elimination. Then, the exercises were progressed to sit to stand, transferring and standing training exercises together with continuing right lower limb strengthening exercises which lasted for two weeks. Finally, the patient was ready to start with gait training, balance exercises and functional activities training which took two weeks. By the time of discharge the patient was able to walk by using the quad cane assistive device with no significant differences in muscles power between both sides except the hip extensors and abductors and knee extensors muscles which found to have minimum differences.

Results

The patient showed marked improvement in the left side which represents the side affected by the tumour resection surgery after the first four weeks of starting rehabilitation program and exhibited slower recovery for the right limb with muscles power graded with gravity elimination except hip extensor and knee extensor which improved to 3/5. In the 8th week at the time of discharge, there were no significant differences in muscles power of both sides except the hip extensors and abductors and knee extensors muscles which found to have minimum differences (Table 1).

Duration after surgical resection	Right side (haemorrhage side)	MP/5	Left side (tumour side)	MP/5
1st day After OR	Hip flex	1/5	Hip flex	1/5
	Hip ext	1/5	Hip ext	1/5
	Hip abd	0/5	Hip abd	0/5
	Hip add	2-/5	Hip add	2-/5
	Knee flex	1/5	Knee flex	1/5
	Knee ext	1/5	Knee ext	1/5
	Ankle dorsiflexors	0/5	Ankle dorsiflexors	0/5
4 weeks	Ankle plantar flexors	0/5	Ankle plantar flexors	0/5
	Hip flex	2+/5	Hip flex	3/5
	Hip ext	3/5	Hip ext	3+/5
	Hip abd	2-/5	Hip abd	3-/5
	Hip add	2/5	Hip add	3/5

	Knee flex	2/5	Knee flex	3/5
	Knee ext	3/5	Knee ext	4-/5
	Ankle dorsiflexors	2-/5	Ankle dorsiflexors	3/5
	Ankle flexors plantar	2/5	Ankle plantar flexors	3/5
8 weeks	Hip flex	3+/5	Hip flex	3+/5
(at the time of discharge)	Hip ext	4-/5	Hip ext	4/5
	Hip abd	2/5	Hip abd	3/5
	Hip add	3+/5	Hip add	3+/5
	Knee flex	3+/5	Knee flex	3+/5
	Knee ext	3+/5	Knee ext	4/5
	Ankle dorsiflexors	3+/5	Ankle dorsiflexors	3+/5
	Ankle flexors plantar	3+/5	Ankle plantar flexors	3+/5
Note: MP: Muscle Power; Ext: Extensor; Flex: Flexors; PF: Plantar Flexors; DF: Dorsiflexors				

Table 1: Summary of patient's lower limb muscle power 1st day after the surgery, 4th week and 8th week at the time of discharge (according to Medical Research Council (MRC) grading).

Discussion

It has been reported that brain tumour patient achieved a good functional outcome with a short length of stay than that of patient with a stroke, which consistent with our case as she recovered much earlier in her tumour resection side than the side of haemorrhage. There are no previous literatures proven that on one patient both sides as with our patient, she developed a complete paraplegia after the once of intracerebral haemorrhage. The patient developed a contra-lateral intracerebral haemorrhage as co-incident event that may happened with hypertensive patient. She recovered in her tumour side after the first four weeks of starting rehabilitation program with generally no significant differences of both sides at the time of discharge after 8 weeks of starting intensive rehabilitation program which gives us one-month earlier recovery of the tumour side. Our findings confirmed the previous studies and may increase the awareness of the need of intensive and early rehabilitation program for stroke patients to prevent long term disabilities [1,7,8]. Our case enrolled in an intensive and early rehabilitation program immediately after the surgery with family involvement program assisting her in repeating the same

activities two times for the rest of the day that improved her recovery in short time [3,9,10]. However, she was ambulatory and independent after two months of intensive inpatient neurorehabilitation program which is consisted with previous studies that proved the importance of an early and intensive rehabilitation [10].

Conclusion

This case report is consistent with previous studies that proven brain tumour patient can achieve a good functional outcome and have short rehabilitation length of stay than stroke patients and highlights of the importance of an early and intensive rehabilitation program especially for stroke patient to prevent long term disabilities, decrease length of stay and to improve brain plasticity.

References

1. Crichton SL, Bray BD, McKevitt C, Rudd AG, Wolfe CD (2016) Patient outcomes up to 15 years after stroke: survival, disability, quality of life, cognition and mental health. *J Neurol Neurosurg Psychiatry* 87: 1091-1098.
2. Yu J, Jung Y, Park J, Kim JM, Suh M, et al. (2019) Intensive Rehabilitation Therapy Following Brain Tumor Surgery: A Pilot Study of Effectiveness and Long-Term Satisfaction. *Ann Rehabil Med* 43: 129-141.
3. Imura T, Nagasawa Y, Fukuyama H, Imada N, Oki S, et al. (2018) Effect of early and intensive rehabilitation in a cute stroke patient: retrospective pre/post-comparison in Japanese Hospital. *Disabil Rehabil* 40: 1452-1455.
4. Wang H, Camicia M, DiVita M, Mix J, Niewczyk P (2015) Early Inpatient Rehabilitation Admission and Stroke Patient Outcomes. *Am J Phys Med Rehabil* 94: 85-96.
5. Kushner DS, Amidei C (2015) Rehabilitation of motor dysfunction in primary brain tumors patients. *Neuro-Oncology Practice* 2: 185-191.
6. Pace A, Villani V, Parisi C, Di Felice S, Lamaro M, et al. (2016) Rehabilitation pathways in adults brain tumor patients in the first 12 months of diseases. A retrospective analysis of services utilization in 719 patients. *Support Care Cancer* 24: 4801-4806.
7. Alamri MS, Waked IS, Amin FM, Al-Quliti KW, Manzar MD. (2019) Effectiveness of an early mobility protocol for stroke patients in intensive care unit. *Neurosciences (Riyadh)* 24: 81-88.
8. Khasru MR, Salek AKM, Moniruzzaman M, Marzen T, Haseen F, et al. (2017) Early versus late rehabilitation for stroke survivors: A prospective study. *BSMMU* 10: 204-209.
9. Hong SE, Kim CH, MD, Kim EJ, Joa KL, Kim TH, et al. (2017) Effect of a Caregiver's Education Program on Stroke Rehabilitation. *Ann Rehabil Med* 41: 16-24.
10. Winstein CJ, Stein J, Arena R, Bates B, Cherney LR, et al. (2016) Guidelines for Adult Stroke Rehabilitation and Recovery: A Guideline for Healthcare Professionals From the American Heart Association/American Stroke Association. *Stroke* 47: e98-e169.