Medical Complications during Inpatient Stroke Rehabilitation in Thailand: A Prospective Study

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Objective: *To identify the incidence and risk factors of medical complications during inpatient stroke rehabilitation.*
Material and Method: *Stroke patients (n = 118) admitted to the Thai Red Cross Rehabilitation Center between August 2006 and January 2007 were prospectively evaluated throughout inpatient rehabilitation to identify incidence of complications.*
Results: *Eighty-three patients (70.3%) experienced at least one complication. The common complications were post-stroke depression (56.6%), musculoskeletal pain (28%), urinary tract infection (UTI) (17.8%), and complex regional pain syndrome (CRPS) type I (15.3%). Others were pneumonia (4.2%), cardiovascular complications (4.2%), falls (4.2%), upper GI bleeding (3.2%), seizure (2.5%), and pressure ulcer (1.7%). Fourteen patients (11.8%) were referred to the acute care hospital because of severe medical complications. History of myocardial infarction, low admission Barthel ADL Index, urinary incontinence, indwelling catheterization, and dysphagia were risk factors of complications ($p < 0.05$). There were no specific risk factors of post-stroke depression. The risk factor of UTI was indwelling catheterization (RR 78.86, $p < 0.001$), CRPS type I was limited shoulder range of motion (RR 3.13, $p = 0.035$), pneumonia was aspiration (RR 145.33, $p < 0.001$), and cardiovascular complication was history of myocardial infarction (RR 7.70, $p = 0.037$).*
Conclusion: *The incidence of medical complication is 70.3%. Post-stroke depression, musculoskeletal pain, UTI and CRPS type I are the common complications. The risk factors of complications are low admission BAI, history of myocardial infarction, urinary incontinence, indwelling catheterization, and dysphagia. Awareness and screening of risk factors should be implemented to lower the incidence.*

Keywords: *Complication, Stroke, Cerebrovascular disease, Rehabilitation, Post-stroke depression, CRPS*

J Med Assoc Thai 2010; 93 (5): 594-600
Full text. e-Journal: *http://www.mat.or.th/journal*

Stroke is a common disease in Thailand. Its prevalence is 690/100,000 per year[1]. It is therefore a leading cause of mortality and disability in the elderly. Most of them were referred to rehabilitation department after acute treatment. Admission to a rehabilitation center for comprehensive rehabilitation was a choice for patients with stable medical and neurological status, presence of functional deficit, having an ability to learn, and enough physical endurance to sit at least for one hour[2].

During inpatient rehabilitation, medical complications impeded recovery and interrupted rehabilitation program. These led to poor functional outcome, longer length of stay (LOS), and increased cost of treatment[3-6]. Mortality rate and institutionalization increased in stroke patients who had complications[7]. Severe and life-threatening complications were more common among severe impairment patients[5]. Rates of transfer from inpatient rehabilitation wards to acute care hospital were 7-19%[7-13]. Rate of complications varied from 44% to 85%[4-6,14-17]. Study methods of stroke varied from retrospective to cohort. There were also variables in rate and type of complications between each racial and rehabilitation center. To the best of the authors' knowledge, there have been no publications regarding the incidence of medical complications during inpatient stroke rehabilitation in Thailand at the time starting this research.

Therefore, the authors aimed to identify the incidence and risk factors of medical complications

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during inpatient stroke rehabilitation at the Thai Red Cross Rehabilitation Center. These lead to improved prevention and management of complications during stroke rehabilitation and may be used for benchmarking with other centers.

Material and Method

Study design

A prospective study.

Patients

The authors conducted a prospective study of stroke patients who were admitted to the Thai Red Cross Rehabilitation Center between August 2006 and January 2007. An initial evaluation was performed by a physiatrist within 72 hours after admission. The Thai Mental State Examination (TMSE) and Thai Geriatric Depression Scale (TGDS) were performed by a psychologist within 72 hours after admission. All stroke patients were regularly evaluated by a physiatrist for newly developed medical complications during inpatient admission.

The present study was approved by the Ethics Committee of the Faculty of Medicine, Chulalongkorn University. Written informed consent was obtained from subjects prior to their evaluation.

Demographic, medical problems and functional status data

Demographic data included age, gender, and marital status. Medical problems and information of stroke impairment, disability and handicap on admission included onset, duration from onset until admission to rehabilitation center, disease characteristics, underlying diseases, conclusion of CT scan or MRI, urinary incontinence and retention, admitted and discharged Barthel ADL Index (BAI)[18], TMSE[19], the Boston Diagnostic Aphasia Examination category[20]. BAI is a standard measurement for determine functional outcome. TMSE is a Thai version of Mini-Mental Status Examination (MMSE) developed and validated in 1993. Its total score is 30 points. The score that are less than 23 points suggested cognitive impairment.

Medical complications data

Complications that occurred throughout inpatient rehabilitation were evaluated. TGDS[21] was used to determine post-stroke depression. TGDS is a Thai version of Geriatric Depression Scale, which was developed and validated in 1994. Total TGDS score is 30 points; and the score of 0-12 are defined as within the normal range. Severity of depression is categorized into three levels: mild = score 13-18, moderate = score 19-24 and severe = 25-30. Post-stroke depression was diagnosed by symptoms and TGDS score more than 12. Standard swallowing examination and 3-oz water swallow test[22] was used for the diagnosis of dysphagia. Pneumonia was diagnosed by clinical findings and chest roentgenogram. Urinary tract infection (UTI) was diagnosed by pyuria and/or positive urine culture in symptomatic patient. Acute myocardial infarction and arrhythmia were diagnosed by clinical findings and abnormal EKG. Deep vein thrombosis (DVT) was diagnosed in symptomatic patients with positive compressive Doppler sonography. Metabolic encephalopathy and recurrent stroke were diagnosed by internal medicine consultation and CT scan or MRI. Musculoskeletal pain was reported in regions such as neck and shoulder. Central post-stroke pain diagnosis was based on criteria described by Boivie J[23]. Diagnosis of the complex regional pain syndrome (CRPS) type I was followed criteria in Bonica's Management of pain[24]. Seizure was recorded as either a new episode or recurrent. Diagnosis of pressure ulcer followed that of the US National Pressure Ulcer Advisory Panel (NPUAP) classification[25]. Recurrent stroke, falls, and gastrointestinal problems were recorded.

Statistical analysis

Incidence rate and type of medical complications were reported by number and percentage. Chi-square and student t-test were used to evaluate the qualitative and quantitative data, respectively. The risk factors of medical complications were analyzed by comparison of data between patients with and without complications. Logistic regression analysis was performed to determine relative risk for develop complications. Statistical significance was accepted if $p < 0.05$. SPSS version 13.0 was used to analyze data.

Results

One hundred and eighteen patients were enrolled in the present study. Their mean age was 63.36 ± 11.21 years. Seventy-two were male (61%). Ninety-three (78.8%) were married. The duration from stroke onset to rehabilitation admission was 65.95 ± 43.61 days. Infarction was a cause of 76 (64.4%) stroke. Right and left hemisphere pathologies were equal. Bilateral hemisphere involvement was 10 (8.5%). Most strokes were from a supratentorial lesion.

Hypertension was the most common underlying disease. Demographic data of the patients is shown in Table 1.

Medical complications

Eighty-three (70.3%) experienced at least one complication. Thirty-four (28.8%) patients had only one complication, 26 (22%) had two complications, and 23 (11%) had at least three complications. Fourteen patients (11.8%) were referred to hospital for acute symptoms; five from pneumonia, three from cardiovascular, three from seizure, one from DVT, one from recurrent stroke, and one from metabolic encephalopathy. Incidence rates and types of complications are shown in Table 2. A detail of an important complication was stated as follows:

Post-stroke depression: Eighty-three patients (70.3%) were evaluated by TGDS except who had communication disorders. Forty-seven patients (56.6%) had depression; mild in 29 cases (34.9%), moderate in 17 cases (20.4%), and severe in one case (1.2%).

Musculoskeletal pain: Eighteen patients (15.3%) had shoulder pain. Leg, knee, back, and other pain were found in four (3%), four (3%), two (1.7%), and three (2.4%) cases, respectively.

Urinary tract infection (UTI): Twenty-one patients (17.8%) had UTI. All of them had lower tract infection.

CRPS type I: CRPS type I was found in 18 patients (15.3%).

Pulmonary aspiration and pneumonia: Seven patients (5.9%) had aspiration. Five patients (4.2%) had pneumonia and all of them experienced aspiration.

Cardiovascular complications: Five patients (4.2%) had cardiovascular problems; two from angina pectoris, two from arrhythmia, and one from exercise-induced coronary spasm.

Risk factors of medical complications

Patients were categorized into complication and non-complication group. Comparison of demographic data, medical problems, and baseline rehabilitation data between groups are shown in Table 3. Significant risk factors to developed medical complications were history of myocardial infarction ($p = 0.024$), admitted BAI score ($p = 0.001$), discharged BAI score ($p = 0.005$), urinary incontinence ($p = 0.032$), indwelling catheterization ($p = 0.033$), dysphagia ($p = 0.005$), and LOS ($p = 0.029$). On admission, patients who had these factors would have more chance to develop complications during

Table 1. Demographic data and clinical characteristics of stroke patients

Mean age ± SD (range), (years)	63.36 ± 11.21 (36-84)
Mean onset ± SD (range), (day)	65.95 ± 43.61 (4-153)
Gender, No. (%)	
Male	72 (61.0)
Female	46 (39.0)
Marital status, No. (%)	
Single	15 (12.7)
Married	93 (78.8)
Divorced/widow	10 (8.5)
Pathology, No. (%)	
Infarction	76 (64.4)
Hemorrhage	42 (35.6)
Hemispheric involvement, No. (%)	
Right	55 (46.6)
Left	53 (44.9)
Bilateral	10 (8.5)
Location of lesion, No. (%)	
Supratentorial	98 (83.1)
Infratentorial	8 (6.8)
Brain atrophy	12 (10.1)
Underlying diseases, No. (%)	
Hypertension	92 (78.0)
Dyslipidemia	51 (43.0)
Diabetes mellitus	31 (26.0)
Previous stroke	14 (12.0)
Myocardial infarction	11 (9.0)

Table 2. Incidence rate of medical complications during inpatient stroke rehabilitation

Medical complications	Number of patient (%)
Post-stroke depression*	47 (56.6)
Musculoskeletal pain	33 (28.0)
Urinary tract infection	21 (17.8)
Complex regional pain syndrome (CRPS) type I	18 (15.3)
Pulmonary aspiration	7 (5.9)
Pneumonia	5 (4.2)
Cardiovascular complication	5 (4.2)
Falls	5 (4.2)
Metabolic encephalopathy	5 (4.2)
Upper GI bleeding	4 (3.4)
Seizure	3 (2.5)
Pressure ulcer	2 (1.7)
Deep vein thrombosis	1 (0.8)
Recurrent stroke	1 (0.8)
Central post-stroke pain	1 (0.8)

* Testing was performed in 83 cases because communication disorders

Table 3. Comparison of demographic data, medical problems and baseline rehabilitation data of complication and non-complication group

Characteristics	Complication group (n = 83)	Non-complication group (n = 35)	p-value
Age (years)	63.92 ± 11.44	62.06 ± 10.67	0.410
Gender (male:female)	48:35	24:11	0.275
Status (single:married:divorced/widow)	9:65:9	6:28:1	0.268
Pathology (infarct:hemorrhage)	56:27	20:15	0.287
Hemisphere (right:left:bilateral)	37:37:8	18:16:1	
Onset	67.67 ± 43.27	60.86 ± 45.27	0.540
Underlying diseases			
Hypertension	65/83 (78.3%)	27/35 (77.1%)	0.889
Diabetes mellitus	23/83 (27.7%)	8/35 (22.9%)	0.586
Myocardial infarction	11/83 (13.3%)	0/35 (0%)	0.024
Dyslipidemia	40/83 (48.2%)	11/35 (31.4%)	0.093
Previous stroke	10/83 (12.0%)	4/35 (11.4%)	0.924
Admitted BAI score	8.85 ± 4.60	12.14 ± 4.87	0.001
Discharged BAI score	12.61 ± 5.21	15.49 ± 4.54	0.005
Length of stay (LOS)	60.66 ± 32.83	46.91 ± 25.12	0.029
TMSE score	20.25 ± 6.28	23.04 ± 6.18	0.066
Dysphasia	21 (25.3%)	8 (22.9%)	0.626
Dysphagia	24 (28.9%)	2 (5.7%)	0.005
Shoulder subluxation	69 (83.0%)	28 (80.0%)	0.684
Limit shoulder range of motion	40 (48.2%)	11 (31.4%)	0.095
Urinary incontinence	25 (30.1%)	4 (11.4%)	0.032
Urinary retention	7 (8.4%)	1 (2.9%)	0.273
Indwelling catheterization	10 (12.0%)	0 (0%)	0.033

BAI = Barthel ADL index; TMSE = Thai mental state examination

rehabilitation. The logistic regression analysis was performed in selected complications. There was no specific risk factor of post-stroke depression. Indwelling catheterization was a risk factor of UTI (RR 78.86, $p < 0.001$). Limit range of motion of weak shoulder was a risk factor of CRPS type I (RR 3.13, $p = 0.035$). Aspiration was a risk factor of pneumonia (RR 145.33, $p < 0.001$). Previous myocardial infarction was a risk factor of cardiovascular complication (RR 7.70, $p = 0.037$).

Discussion

The incidence rate of medical complications during inpatient stroke rehabilitation in the present study is 70.3%. This is an important issue because medical complications lead to poor functional outcome, longer LOS and discharge to long-term care facility[12,26,27]. This is the first prospective study of incidence of medical complications during inpatient stroke rehabilitation in Thailand. This is higher than that of Scotland (59%)[6], Singapore (54.3%)[14], Taiwan (44%)[15], and the United Kingdom[28], but it is lower than that in Poland (78.5%)[10] and another center in Scotland (85%)[9], it is close to that of the United States of America (75%)[5] and Canada (67%)[16]. Studies from the United States, Canada, and Scotland[5,9,16] were done prospectively as the authors. Studies from Singapore, Taiwan, and Poland[10,14,15] were done retrospectively. Retrospective reviews from medical record may have missed some complications. So fewer incidents were recorded, except a study from Poland where dependent edema was recorded as a complication.

Three most common complications of the present study are post-stroke depression, musculoskeletal pain, and UTI. They were also the most common complications during stroke rehabilitation in many studies[4-6,12,15-17,28]. Significant risk factors of medical complications in the present study were a history of myocardial infarction, low admitted BAI score, urinary incontinence, indwelling catheterization and dysphagia. These are similar to other studies[12,15]. Patients who

had these factors will have more chance to develop complications during rehabilitation. Awareness of high-risk patients may lead to an improved prevention and treatment of complications. Twelve percent of stroke patients were referred to hospital for treating acute complications. Other studies found 7-19% referral rate[7-13]. This is an important parameter to determine efficiency of screening process for proper patient admitted to rehabilitation center.

Post-stroke depression was found in 56.6% of stroke patients. This finding is higher than an incidence from other studies[4,5,12,14-17,28]. Depression was a common complication and should be promptly managed. TGDS can detect a post-stroke depression although mild degree. Therefore, every stroke patient admitted for rehabilitation should be tested with TGDS. Twenty-eight stroke patients had musculoskeletal pain. Most of them were shoulder pain. CRPS was diagnosed in half of patients with shoulder pain. The incidence of CRPS in the present study was 15.3%. This is similar to another review[29]. Limited range of motion of shoulder was a risk factor for development of CRPS. Rehabilitation team should be aware of CRPS especially in patients who developed shoulder joint stiffness. UTI was found in 17.8% of stroke patients. All of them involved lower tract and associated with indwelling catheterization. Stroke patients should have the catheter removed and bladder training started as soon as possible. Pneumonia was 4.2% and was the most frequent cause of referral to acute care in the present study. This small proportion but serious complications should be aware in patients with dysphagia and aspiration. Swallowing evaluation must be performed in all stroke patients, thus proper management can prevent them from pneumonia. The second cause of referral is cardiovascular complication. Most of the events occurred during exercise with arm crank and walking ambulation. Small muscle exercise such as arm crank exercise has higher cardiac loading than large muscle exercise. Walking exercise can caused cardiovascular complication if improperly performed in high-risk patients. History of myocardial infarction associated with this complication. This result is similar to another study[30]. Therefore, the authors recommend the following: 1) cardiovascular risk screening in all stroke patients and 2) proper monitoring in stroke patients with previous cardiovascular problems. Falls rate of the present study was less than recent studies from this center[31]. This might be due to the development of fall prevention strategy after a recent study. Other complications were fewer incidences. Each complication needed long-term study to get enough samples for statistical analysis.

In conclusion, the present study revealed a high incidence of medical complications during inpatient stroke rehabilitation. This figure is more or less similar to rehabilitation centers in the North America; nevertheless, it is higher than some Asian countries. Seventy percent of the cases had at least one complication, and 12% needed referral to acute care hospital. Most common complications were post-stroke depression, musculoskeletal pain, UTI, CRPS type I and aspiration pneumonia. Awareness and screening of risk factors of complication should be implemented for lowering the incidence.

Acknowledgements

The authors wish to thank Assist. Prof. Jariya Boonhong (Department of Rehabilitation Medicine, Chulalongkorn University) and Mr. Wasan Panyasang (Statistic science center, Chulalongkorn University) for their advice regarding statistical analysis; and Dr. Mano Mettanando Laohavanich for his advice regarding correction of the English manuscript.

References

1. Viriyavejakul A. Stroke in Asia: an epidemiological consideration. Clin Neuropharmacol 1990; 13 (Suppl 3): S26-33.
2. The Agency for Health Care Policy and Research (AHCPR). Post-stroke rehabilitation guideline panel. Post-stroke rehabilitation: Clinical practice guideline number 16. Rockville: AHCPR publication; 1995: 4.
3. Roth EJ. Medical complications encountered in stroke rehabilitation. Phys Med Rehabil Clin North Am 1991; 2: 563-77.
4. McLean DE. Medical complications experienced by a cohort of stroke survivors during inpatient, tertiary-level stroke rehabilitation. Arch Phys Med Rehabil 2004; 85: 466-9.
5. Roth EJ, Lovell L, Harvey RL, Heinemann AW, Semik P, Diaz S. Incidence of and risk factors for medical complications during stroke rehabilitation. Stroke 2001; 32: 523-9.
6. Davenport RJ, Dennis MS, Wellwood I, Warlow CP. Complications after acute stroke. Stroke 1996; 27: 415-20.
7. Feigenson JS, McCarthy ML, Greenberg SD, Feigenson WD. Factors influencing outcome and

length of stay in a stroke rehabilitation unit. Part 2. Comparison of 318 screened and 248 unscreened patients. Stroke 1977; 8: 657-62.
8. Feigenson JS, McDowell FH, Meese P, McCarthy ML, Greenberg SD. Factors influencing outcome and length of stay in a stroke rehabilitation unit. Part 1. Analysis of 248 unscreened patients-medical and functional prognostic indicators. Stroke 1977; 8: 651-6.
9. Adler M, Hamaty D, Brown CC, Potts H. Medical audit of stroke rehabilitation: a critique of medical care review. J Chronic Dis 1977; 30: 461-71.
10. Feigenson JS, Gitlow HS, Greenberg SD. The disability oriented rehabilitation unit-a major factor influencing stroke outcome. Stroke 1979; 10: 5-8.
11. Dobkin BH. Neuromedical complications in stroke patients transferred for rehabilitation before and after diagnostic related group. J Neuro Rehab 1987; 1: 3-7.
12. Dromerick A, Reding M. Medical and neurological complications during inpatient stroke rehabilitation. Stroke 1994; 25: 358-61.
13. Stineman MG, Ross R, Maislin G, Fiedler RC, Granger CV. Risks of acute hospital transfer and mortality during stroke rehabilitation. Arch Phys Med Rehabil 2003; 84: 712-8.
14. Doshi VS, Say JH, Young SH, Doraisamy P. Complications in stroke patients: a study carried out at the Rehabilitation Medicine Service, Changi General Hospital. Singapore Med J 2003; 44: 643-52.
15. Hung JW, Tsay TH, Chang HW, Leong CP, Lau YC. Incidence and risk factors of medical complications during inpatient stroke rehabilitation. Chang Gung Med J 2005; 28: 31-8.
16. Langhorne P, Stott DJ, Robertson L, MacDonald J, Jones L, McAlpine C, et al. Medical complications after stroke: a multicenter study. Stroke 2000; 31: 1223-9.
17. Domka E, Myjkowska E, Kwolek A. Incidence of neuromedical complications during rehabilitation after stroke [abstract]. Neurol Neurochir Pol 2005 [cited 2007 Jan 12]; 39: 300-9. Available from: http://www.ncbi.nlm.nih.gov/sites/entrez
18. Wade DT, Collin C. The Barthel ADL Index: a standard measure of physical disability? Int Disabil Stud 1988; 10: 64-7.
19. Train the Brain Forum (Thailand). Thai Mental State Examination (TMSE). Siriraj Hosp Gaz 1993; 45: 359-74.
20. DeLisa JA, Gans BM, editors. Rehabilitation medicine: principles and practice. 3rd ed. Philadelphia: Lippincott-Raven; 1998: 246-7.
21. Train the Brain Forum (Thailand). Thai Geriatric Depression Scale (TGDS). Siriraj Hosp Gaz 1994; 46: 1-9.
22. DePippo KL, Holas MA, Reding MJ. Validation of the 3-oz water swallow test for aspiration following stroke. Arch Neurol 1992; 49: 1259-61.
23. Boivie J. Central pain. In: Wall PD, Melzack RM, editors. Textbook of pain. 4th ed. Edinburgh: Churchill Livingstone; 1999: 879-914.
24. Galer BS, Schwartz L, Allen RJ. Complex regional pain syndrome type I: Reflex sympathetic dystrophy, and type II: Causalgia. In: Loeser JD, Butler SH, Chapman CR, Turk DC, editors. Bonica's management of pain. 3rd ed. Philadelphia: Lippincott Williams & Wilkins; 2001: 388-411.
25. Black JM. Moving toward consensus on deep tissue injury and pressure ulcer staging. Adv Skin Wound Care 2005; 18: 415-1.
26. Brosseau L, Philippe P, Potvin L, Boulanger YL. Post-stroke inpatient rehabilitation. I. Predicting length of stay. Am J Phys Med Rehabil 1996; 75: 422-30.
27. Brosseau L, Potvin L, Philippe P, Boulanger YL. Post-stroke inpatient rehabilitation. II. Predicting discharge disposition. Am J Phys Med Rehabil 1996; 75: 431-6.
28. Kalra L, Yu G, Wilson K, Roots P. Medical complications during stroke rehabilitation. Stroke 1995; 26: 990-4.
29. Moroz A, Bogey RA, Bryant PR, Geis CC, O'Neill BJ. Stroke and neurodegenerative disorders. 2. Stroke: comorbidities and complications. Arch Phys Med Rehabil 2004; 85 (3 Suppl 1): S11-4.
30. Konchalard K, Chaiwanichsiri D, Aksaranugraha S. Cardiovascular problems in stroke patients at Thai Red Cross Rehabilitation Center. J Thai Rehabil Med 2000; 9: 111-9.
31. Chaiwanichsiri D, Jiamworakul A, Kiti-somprayoonkul W. Falls among stroke patients in Thai Red Cross rehabilitation center. J Med Assoc Thai 2006; 89 (Suppl 3): S47-52.

ภาวะแทรกซ้อนของผู้ป่วยโรคหลอดเลือดสมองระหว่างการฟื้นฟูสมรรถภาพแบบผู้ป่วยในของประเทศไทย: การศึกษาแบบไปข้างหน้า

วสุวัฒน์ กิติสมประยูรกุล, พีรพร สังขะโพธิ์, สุกัญญา ทวีมนูญ, ดุจใจ ชัยวานิชศิริ

วัตถุประสงค์: *เพื่อศึกษาอุบัติการณ์และปัจจัยเสี่ยงของภาวะแทรกซ้อนของผู้ป่วยโรคหลอดเลือดสมองระหว่างการฟื้นฟูสมรรถภาพแบบผู้ป่วยใน*

วัสดุและวิธีการ: *ผู้ป่วยโรคหลอดเลือดสมองจำนวน 118 ราย ที่เข้ารับการฟื้นฟูสมรรถภาพที่ศูนย์เวชศาสตร์ฟื้นฟูสภากาชาดไทย ระหว่างเดือนสิงหาคม พ.ศ. 2549 ถึงเดือนมกราคม พ.ศ. 2550 ได้รับการตรวจประเมินหาภาวะแทรกซ้อนที่เกิดขึ้นในระหว่างการฟื้นฟูสมรรถภาพ*

ผลการศึกษา: *ผู้ป่วยโรคหลอดเลือดสมองมีภาวะแทรกซ้อน 83 ราย (ร้อยละ 70.3) ภาวะแทรกซ้อนที่พบบ่อยตามลำดับ ได้แก่ ภาวะซึมเศร้าภายหลังจากโรคหลอดเลือดสมอง (ร้อยละ 56.6) ปวดกระดูกกล้ามเนื้อ (ร้อยละ 28) ติดเชื้อทางเดินปัสสาวะ (ร้อยละ 17.8) complex regional pain syndrome (CRPS) type I (ร้อยละ 15.3) ปอดอักเสบ (ร้อยละ 4.2) ปัญหาระบบหัวใจหลอดเลือด (ร้อยละ 4.2) ล้ม (ร้อยละ 4.2) เลือดออกในทางเดินอาหาร (ร้อยละ 3.2) ชัก (ร้อยละ 2.5) และแผลกดทับ (ร้อยละ 1.7) มีผู้ป่วย 14 ราย (ร้อยละ 11.8) ถูกส่งต่อไปรักษาภาวะแทรกซ้อน พบว่า ประวัติหัวใจขาดเลือด คะแนน Barthel ADL Index แรกรับต่ำ ปัสสาวะเล็ดราด สวนคาสายสวนปัสสาวะและกลืนลำบากเป็นปัจจัยเสี่ยงของการเกิดภาวะแทรกซ้อน ($p < 0.05$) ไม่พบปัจจัยเสี่ยงโดยตรงของภาวะซึมเศร้า แต่พบว่า การสวนคาสายสวนปัสสาวะเป็นปัจจัยเสี่ยงของการติดเชื้อทางเดินปัสสาวะ (RR 78.86, $p < 0.001$) การลดลงของพิสัยข้อไหล่เป็นปัจจัยเสี่ยงของการเกิด CRPS (RR 3.13, $p = 0.035$) การสำลักอาหารเป็นปัจจัยเสี่ยงของการเกิดปอดอักเสบ (RR 145.33, $p < 0.001$) ประวัติหัวใจขาดเลือดเป็นปัจจัยเสี่ยง ของภาวะแทรกซ้อนของระบบหัวใจหลอดเลือด (RR 7.70, $p = 0.037$)*

สรุป: *พบอุบัติการณ์ของภาวะแทรกซ้อนของผู้ป่วยโรคหลอดเลือดสมองระหว่างการฟื้นฟูสมรรถภาพร้อยละ 70.3 ภาวะแทรกซ้อนที่พบบ่อย ได้แก่ ภาวะซึมเศร้า ปวดกระดูกกล้ามเนื้อ ติดเชื้อทางเดินปัสสาวะและ CRPS type I พบว่าปัจจัยเสี่ยงของการเกิดภาวะแทรกซ้อน ได้แก่ คะแนน Barthel ADL Index แรกรับต่ำ ผู้ป่วยที่มีประวัติหัวใจขาดเลือด ปัสสาวะเล็ดราด สวนคาสายสวนปัสสาวะและกลืนลำบาก การตระหนักถึงและการตรวจคัดกรองปัจจัยเสี่ยงของภาวะแทรกซ้อนเป็นสิ่งที่ควรปฏิบัติเพื่อลดอุบัติการณ์ของภาวะแทรกซ้อน*