Incidence and Risk Factors of Acute Delirium in Older Patients with Hip Fracture in Siriraj Hospital

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Objective: *To determine the incidence and associated factors of delirium in older patients admitted with hip fracture.*
Material and Method: *Eighty patients with fall-related hip fracture who admitted to orthopedics wards in Siriraj Hospital were recruited. Baseline characteristics, functional ability and cognitive status, treatment-related factors, clinical outcomes, length of stay, and direct medical cost were evaluated. Delirium was diagnosed by experienced geriatricians using DSM-IV.*
Results: *Thirty-six patients (45%) developed delirium. Hyperactive and hypoactive delirium was 24:12 patients. Preoperative and postoperative delirium was developed in 18:18 patients. Age, TMSE score on admission, modified IQCODE score, premorbid mRS, receiving NSAIDs around the clock postoperatively, and sedative drug use were significantly different between the non-delirium and delirium groups in multivariate logistic regression analysis. Patients with delirium did not have significantly higher postoperative complications, hospital length of stay, functional status (mRS) at discharge, mortality, and direct cost of the treatment in hospital.*
Conclusion: *Delirium is common in elderly hip fracture undergoing hip repair. Age, premorbid function, dementia/cognitive impairment, NSAIDs, and sedative use were associated factors of delirium. Identifying those with high-risk factors should be routinely performed rigorously and strategies to reduce delirium incidence and severity should be planned and conducted.*

Keywords: *Delirium, Hip fracture, Incidence, Cognitive impairment, Functional status*

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Hip fracture is the most serious consequence of falls among older people leading to increased mortality, functional decline, and institutionalization[1,2]. One-year mortality rates were reported to be 31% in males and 16% in females with the median survival time of 6 years[3]. One of the most common complications of hip fracture is delirium. Delirium is a serious neuropsychiatric syndrome characterized by acute confusion with a fluctuating nature, poor attention, and alteration of consciousness. Delirium results in higher rates of major complications, longer hospital stay, poor functional recovery, long-term cognitive impairment, increased mortality, and higher healthcare costs[4-6].

The present study focused on older patients with fall-related hip fracture undergoing hip surgery as this has been reported to be a common and devastating condition leading to adverse clinical and economic outcomes. Despite its burden, there has been no study in Thailand examining the incidence and course of delirium in hip fracture patients undergoing hip surgery. The primary purpose of this study was to determine the incidence rate of delirium in older patients with hip fracture. The secondary purpose was to investigate the associated factors of delirium in this population in order to develop further prevention plans.

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Material and Method

A sample of 80 older patients with fall-related hip fracture who underwent hip surgery in the Department of Orthopedic Surgery, Siriraj Hospital between November 2010 and February 2012 were asked to participate in the study. All subjects were community-dwelling at time of fracture and aged 60 years and older. The authors selected only patients with history of a fall from standing height resulting in a hip fracture, as this is one of the most common mechanisms for hip fracture in the elderly. Exclusion criteria included patients with pathologic fractures and high-energy trauma fractures, patients who sustained

concurrent head injury who might not be able to recall the events associated with the fall, and those who were unwilling to participate in the study. Written informed consent was obtained from all study participants or their legal guardians. The study was approved by the Siriraj Institutional Review Board of Faculty of Medicine, Siriraj Hospital, Mahidol University.

All patients were evaluated within 24 hours of admission preoperatively and daily on day 1 to 7 postoperatively. All patients were followed-up until discharge from the hospital. Symptoms and signs of delirium and changes in the patients' cognition were documented in a nursing record three times a day and in a doctor's daily progression note.

The primary outcome of the present study was total incidence of delirium during the hospitalization. Delirium was assessed using the Confusion Assessment Method (CAM) diagnostic algorithm by two trained physicians in internal medicine[7]. Experienced geriatricians subsequently evaluated patients and delirium was diagnosed according to the fourth edition of Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)[8]. Delirium subtypes were classified into hyperactive, hypoactive and mixed types. Hyperactive delirium was diagnosed when a patient had increased arousal, restlessness, agitation, hallucinations, and inappropriate behaviors. Hypoactive delirium was diagnosed when a patient was lethargic, had reduced motor activity or incoherent speech, and lacked interest. Mixed delirium was when hyperactive and hypoactive signs and symptoms coexisted.

The secondary outcome of this study was to identify risk factors associated with delirium. A range of preoperative and postoperative risk factors was evaluated and documented. Demographic characteristics (age, sex, marital status, educational level, socioeconomic status, premorbid modified Rankin Scale (mRS), the use of gait and instrumental aids, fall-related events) were collected from the patient and family members/caregivers who had known the patients' symptoms well. The modified Rankin Scale (mRS) is commonly used scale to measure disability or dependence in activities of daily living[9]. The scale ranges from 0 to 6, running from no disability to death.

Medical history and medication used were assessed from the patient, proxy, and medical records. The Charlson comorbidity index, which is a method of predicting mortality by classifying or weighting comorbid conditions (comorbidities), was calculated[10]. Proxy report of cognition included the modified Informant Questionnaire on Cognitive Decline in the Elderly (modified IQCODE), which is based on information from the informant about the changes, over 10 years, of the elderly in everyday cognitive functioning suggestive of dementia. The proposed cutoff score among Thai elderly was 3.42, with 90% sensitivity and 95% specificity[11]. The patient cognition was assessed during initial hospitalization using the Thai Mental State Examination (TMSE). The TMSE score ranges from 0 to 30, a lower score being suggestive of worse cognitive function[12].

The following laboratory parameters were collected preoperatively: complete blood count, renal function, electrolyte, blood sugar, serum albumin, urine examination, chest X-ray, and electrocardiogram. Intraoperative treatments/complications and post-operative treatments/complications were evaluated using medical chart/clinical and laboratory assessment. Intraoperative complications included hypotension, estimated blood loss >1 liter, bronchospasm, delayed extubation and cardiac arrhythmias. Hospital length of stay and direct cost of medical care during the hospital stay were also recorded.

Statistical analysis

Statistical analysis was performed using SPSS for Windows version 17 software. All data were tested for normality. Baseline characteristics and characteristics of factors were analyzed using the descriptive statistics. Categorical variables were analyzed using Chi-square test. Independent sample t-test and Mann-Whitney U test were used to compare continuous variables depending on the data distribution. Fisher's exact test was used for categorical data that have a count of less than 5. Kruskal-Wallis test was used to compare medical cost of three groups of patients. All statistically significant variables of the univariate analysis were subjected to the logistic regression analysis to analyze the associated factors of delirium occurrence. Two-tailed p-value <0.05 were considered statistically significant.

Results

During the study period, 80 elderly with hip fracture related to falls were admitted and recruited. The patients had a mean age of 79.4 (SD 7.9) years and 62 (77.5%) of them were women. Thirty patients (42.5%) had history of falls in one year prior to the admission. Twenty-three of them (28.8%) had poor premorbid functional status (mRS 3-5) and 33 (41.3%) needed caregivers to take care of their everyday activities. In addition, 37 (46.2%) of them had history

of significant cognitive impairment as determined by the modified IQCODE higher than 3.42.

The majority of patients had fracture at neck of femur (49 cases, 61.3%) followed by intertrochanteric fracture (30 cases, 37.5%), and subtrochanteric fracture (1 case, 1.2%). Forty-two patients (52.5%) were admitted to general orthopedic wards while the rest were admitted to private wards.

Thirty-six patients (45%) developed delirium. Of these, 24 (66.7% of delirium cases) had hyperactive delirium and 12 (33.3%) had hypoactive delirium. Delirium was developed prior to the surgery among 18 patients. During postoperative period, 18 out of the 62 delirium-free patients (29.0%) developed delirium. The baseline characteristics of patients and baseline preoperative laboratory functions are tabulated in Table 1, 2, respectively. Patients who had delirium as compared to those with no delirium were significantly older, with lower TMSE score, higher score on modified IQCODE, and worse premorbid mRS. Patients with modified IQCODE higher than 3.42 tended to have higher proportion of hyperactive delirium (77.3%) than those with modified IQCODE lower than 3.42 (50%), but the difference did not reach statistical significance (p = 0.148). There was no significantly different in preoperative laboratory functions (Table 2).

The majority of the patients received operative treatment (74 patients, 92.5%). The median time from admission to surgery was four (range 1-28)

Table 1. Characteristics of the study sample (n = 80)

Baseline characteristics	Patients without delirium (n = 44)	Patients with delirium (n = 36)	Total (n = 80)	*p*-value
Age (year), mean ± SD	77.0±8.7	82.2±5.7	79.4±7.9	0.002
Female, n (%)	33 (75.0)	29 (80.6)	62 (77.5)	0.554
Education , n (%)				0.658
No formal education	4 (9.1)	1 (2.8)	5 (6.3)	
Primary school	27 (61.4)	27 (75.0)	54 (67.5)	
Secondary school	6 (13.6)	3 (8.3)	9 (11.3)	
Diploma/bachelor degree/higher	7 (15.9)	5 (13.9)	12 (15.0)	
BMI (kg/m^2), mean ± SD	22.1±4.1	22.1±3.2	22.1±3.7	0.942
Charlson comorbidity index, mean ± SD	5.3±1.4	5.6±1.5	5.5±1.4	0.407
Comorbid diseases from medical record, n (%)				
Stroke	8 (18.2)	6 (16.7)	14 (17.5)	0.859
Parkinson disease	2 (4.5)	2 (5.6)	4 (5.0)	0.999
Dementia	5 (11.4)	9 (25.0)	14 (17.5)	0.110
Hypertension	36 (81.8)	28 (77.8)	64 (80.0)	0.653
Ischemic heart disease	6 (13.6)	6 (16.7)	12 (15.0)	0.706
Diabetes mellitus	16 (36.4)	11 (30.6)	27 (33.8)	0.585
Malignancy	3 (4.8)	1 (2.8)	4 (5.0)	0.623
COPD	3 (4.8)	1 (2.8)	4 (5.0)	0.623
Kidney disease	8 (18.2)	5 (13.9)	13 (16.3)	0.605
Visual impairment	9 (20.5)	6 (16.7)	15 (18.8)	0.666
Number of current medication >4, n (%)	25 (56.8)	22 (61.1)	47 (58.7)	0.698
TMSE, mean ± SD	23.7±5.1	15.9±6.1	20.4±7.1	0.0001
Modified IQCODE, median (range)	3.2 (2.8-4.4)	3.5 (2.7-5)	3.3 (2.7-5)	0.005
Premorbid mRS 0-2, n (%)	37 (84.1)	20 (55.6)	57 (71.3)	0.005
Dependency requiring caregiver, n (%)	15 (34.1)	18 (50.0)	33 (41.3)	0.150
History of falls in 1 year, n (%)	18 (40.9)	16 (44.4)	34 (42.5)	0.750
Fracture type: femoral neck , n (%)	27 (61.4)	22 (61.1)	49 (61.3)	0.942
Type of hospitalized unit (special room/total) , n (%)	24 (54.5)	18 (50.0)	42 (52.5)	0.685

BMI = body mass index; COPD = chronic obstructive pulmonary disease; TMSE = Thai Mental State Examination; IQCODE = Informant Questionnaire on Cognitive Decline in the Elderly; mRS = modified Rankin Scale

days with nine (12%) of them receiving the operation within 48 hours of admission. The median time from the fracture to delirium occurrence, and admission to delirium occurrence were seven (range 1-27), and five (range 1-27) days, respectively. Among those who developed delirium postoperatively, time from surgery to delirium occurrence was two (range 1-13) days. There was no statistical difference with regards to surgical treatment, anesthetic procedure and intraoperative complications compared between delirium and non-delirium groups. In patients with at least one intraoperative complication compared to those without (33.3% vs. 66.7%), there was no statistical difference in developing delirium (46.7% vs. 55.3%, p = 0.202). However, in postoperative period, patients who received the NSAIDs around the clock or sedatives had higher proportion of developing delirium (Table 3).

Patients with delirium did not have significantly higher postoperative complications, hospital length of stay, functional status (mRS) at discharge, mortality, and direct cost of the treatment

Table 2. Baseline preoperative laboratory tests

Variables	Patients without delirium (n = 44) n (%)	Patients with delirium (n = 36) n (%)	Total (n = 80) n (%)	*p*-value
Hematocrit, mean ± SD	34.0±5.1	33.8±5.4	34.0±5.2	0.860
Serum albumin (mg/dL), mean ± SD	3.6±0.4 (n = 42)	3.6±0.5 (n = 33)	3.6±0.5 (n = 75)	0.900
Serum creatinine (mg/dL), median (min-max)	0.9 (0.5-14.9)	1.0 (0.5-4.4)	0.9 (0.5-14.9)	0.432
BUN/Cr ratio >20	18 (40.9)	10 (20.8)	28 (35.0)	0.221
Blood sugar at admission (mg/dL), median (min-max)	109.5 (79-495)	122.5 (72-360)	115.5 (72-495)	0.757
Serum sodium (mEq/dL), median (min-max)	137.0 (126-145)	139.0 (115-145)	137.5 (115-145)	0.824

BUN/Cr = blood urea nitrogen/creatinine

Table 3. Treatment-related factors comparing between patients with and without delirium

Variables	Patients without delirium (n = 44) n (%)	Patients with delirium (n = 36) n (%)	Total (n = 80) n (%)	*p*-value
Received surgical treatment	41 (93.2)	33 (91.7)	74 (92.5)	1.000
Time from admission to surgery, median (range in days)	4 (2-25)	5 (1-28)	4 (1-28)	0.742
Surgical type: hemiarthroplasty	20 (45.8)	16 (48.5)	36 (48.6)	0.980
Anesthesia type (n = 74)				0.225
General anesthesia	13 (31.7)	15 (45.5)	28 (37.8)	
Spinal block	28 (68.3)	18 (54.5)	46 (62.2)	
Intraoperative complications (n = 74)				
Presence of complication	12 (29.3)	14 (42.4)	26 (35.1)	0.239
Hypotension	10 (24.4)	12 (36.4)	22 (29.7)	0.263
Estimated blood loss >1 litre	0 (0)	0 (0)	0 (0)	Not available
Bronchospasm	0 (0)	2 (6.1)	2 (2.7)	0.195
Delayed extubation	2 (4.9)	0 (0)	2 (2.7)	0.499
Cardiac arrhythmias	0 (0)	0 (0)	0 (0)	Not available
Postoperative analgesia				
Paracetamol around the clock	9 (20.5)	12 (33.3)	21 (26.2)	0.193
Tramadol ± Paracetamol around the clock	6 (13.6)	11 (30.6)	17 (21.2)	0.099
Morphine around the clock	1 (2.3)	2 (5.6)	3 (3.8)	0.585
NSAIDs around the clock	1 (2.3)	6 (16.7)	7 (8.8)	0.042
Sedative drug prescribed	9 (20.5)	16 (44.4)	25 (31.2)	0.021
Urinary catheter used	9 (20.5)	10 (20.8)	19 (23.8)	0.444

in hospital (Table 4). When comparing general to regional anesthesia, there was no statistical difference with regards to delirium occurrence (45.5% vs. 54.5%, $p = 0.225$), mortality rate (3.6% vs. 0%, $p = 0.378$), and hospital length of stay (19.3±13.0 vs. 19.0±14.5 days, $p = 0.932$).

By comparing those with hyperactive delirium vs hypoactive delirium vs. no delirium, there was no statistical difference in terms of postoperative complications other than delirium and hospital length of stay. However, in general ward patients with hyperactive delirium had median direct cost of treatment higher than those with hypoactive delirium and no delirium significantly (94,837.0 vs. 62,181.0 vs. 62,831.5 baht, $p = 0.047$). This statistical difference was not detected in patients admitted to the private wards.

Age, TMSE score on admission, modified IQCODE score, premorbid mRS, receiving NSAIDs around the clock postoperatively and sedative drug use were significantly different between the non-delirium and delirium groups in univariate analysis. Factors that remained statistically significant and associated with delirium occurrence in the logistic regression analysis are shown in Table 5.

Discussion

Delirium is common in older patients with hip fracture undergoing surgical treatment. It can occur before and after the surgery. Delirium can develop in one to 13 days after the surgery with the median of two days. Age, modified IQCODE score, premorbid functional status, cognitive impairment measured by TMSE, receiving NSAIDs around the clock postoperatively, and sedative drug use are associated with delirium occurrence. The use of NSAIDs around the clock might reflect the degree of pain the patients suffered from the surgery.

The incidence of delirium in this study (45%) was similar to those previously reported (38-61%) in

Table 4. Postoperative complications and clinical outcomes of the study sample

Variables	Patients without delirium (n = 44), n (%)	Patients with delirium (n = 36), n (%)	Total (n = 80) n (%)	*p*-value
No complication	23 (52.3)	0 (0)	23 (28.8)	
Complications other than delirium	21 (47.7)	10 (27.8)	31 (38.8)	0.068
Lung atelectasis	2 (4.5)	0 (0)	2 (2.5)	0.499
Pneumonia	5 (11.4)	2 (5.6)	7 (8.8)	0.449
Urinary tract infection	9 (20.5)	9 (25.0)	18 (22.5)	0.628
Diarrhea or colitis	2 (4.5)	0 (0)	2 (2.5)	0.499
Gouty attack	2 (4.5)	0 (0)	2 (2.5)	0.499
Congestive heart failure	1 (2.3)	1 (2.8)	2 (2.5)	1.000
Pressure ulcer	1 (2.3)	0 (0)	1 (1.3)	1.000
Deep vein thrombosis	0 (0)	1 (2.8)	1 (1.3)	0.450
Pulmonary embolism	1 (2.3)	1 (2.8)	2 (2.5)	1.000
Bronchitis	1 (2.3)	0 (0)	2 (2.5)	1.000
Pleural effusion	1 (2.3)	0 (0)	1 (1.3)	1.000
Hypoglycemia	1 (2.3)	0 (0)	1 (1.3)	1.000
Death	2 (4.5)	1 (2.8)	3 (3.8)	1.000
Hospital length of stay (days), median (range)	15.5 (7-52)	15.0 (5-75)	15.0 (5-75)	0.742
Discharge mRS (mean ± SD)	4.1±0.8	4.2±0.7	4.1±0.8	0.233
Cost of care	87,287.3 (23,817.0-260,976.5) (n = 44)	87,533.5 (24,234.5-371,108.5) (n = 36)	87,533.5 (23,817.0-371,108.5) (n = 80)	
General wards, median (range)	62,831.5 (23,817.0-260,976.5) (n = 26)	79,735.8 (24,234.5-166,208.0) (n = 21)	75,425.8 (23,817.0-260,976.5) (n = 47)	0.242
Private ward, median (range)	99,834.5 (52,023.0-253,796.0) (n = 18)	112,217.0 (26,819.0-37,1108.5) (n = 15)	104,435.5 (26,819.0-371,108.5) (n = 33)	0.704

Table 5. Association between risk factors and postoperative delirium by univariate and multiple logistic regression

Variables	Univariate OR (95% confidence interval)	Multivariate OR (95% confidence interval)	*p*-value
Age	1.099 (1.028, 1.174)	1.094 (1.002, 1.196)	0.046
Premorbid mRS	1.687 (1.166, 2.441)	1.703 (1.030, 2.816)	0.038
Modified IQCODE ≥3.42	3.038 (1.217, 7.587)	4.538 (1.221, 16.870)	0.024
TMSE ≤23	2.728 (1.062, 7.012)	6.339 (1.550, 25.915)	0.010
NSAIDs around the clock	8.600 (1.001, 75.151)	10.616 (1.059, 106.378)	0.045
Sedatives used	3.111 (1.163, 8.325)	4.543 (1.193, 17.302)	0.027

NSAIDs = non-steroidal anti-inflammatory drugs

individuals with hip fracture[13,14]. It was also similar to previous study of delirium among Thai older medical inpatients[15]. The disparity of reported incidence might be from the difference in diagnostic criteria used, population characteristics, urgency of the surgery, and method of delirium surveillance[16]. Moreover, delirium symptoms fluctuate over time and may not be apparent at the time of assessment. However, in the present study, the researchers use multiple sources of data including daily cognitive assessment by medical residents, nurse record information, and proxy data, which should together be likely to identify most case of delirium. The patients in present study developed delirium seven days after the fracture onset and five days after the admission which was similar to the time to receive surgery. It would be interesting to investigate whether a shorter waiting time to definitive treatment could have contributed to the risk of developing delirium.

Age was an independent risk factor for delirium in the regression analysis. Studies that did not demonstrate age as an independent risk factor might be from the categorized age as a group, not a continuous variable[17]. Functional and cognitive impairment were the important risk factors in this study, which is similar to other studies[4,17]. Cognitive impairment was assessed by previous dementia diagnosis in medical records, modified IQCODE, which is reported to be an alternative screening test for dementia in Thailand with acceptable sensitivity and specificity. Our finding is similar to a previous report that dementia is highly prevalent in delirium and patients with dementia more often had hyperactive delirium[18].

Anesthesia technique was not associated with delirium occurrence, mortality, and hospital length of stay in this study. This finding is similar to a recent study by Neuman et al that the use of regional anesthesia compared with general anesthesia in patients undergoing hip surgery was similarly not associated with lower 30-day mortality[19]. However, in that study it was associated with a modestly shorter length of stay.

In the present study, patients with hyperactive delirium had higher direct medical cost compared to those with hypoactive delirium and no delirium. This finding was confirmed only in general orthopedic wards, not in the private wards. One possible hypothesis is that this could have been contributed to the setting of having relatives accompanying the patients all the time in private wards but such relatives could only be allowed a limited time of visit in general wards at our hospital. In general, wards where the majority of care was provided by a limited number of nursing staff, taking care of hyperactive delirium could have been difficult and lead to higher complications. Hypoactive delirium, on the other hand, might cause fewer problems for general care during hospitalization. In private wards, the difference was not evidenced, which could have been alleviated because a relative accompanied delirious patients.

This study had a number of strengths. It is a prospective follow-up of participants admitted to the hospital until discharge. There was no prospective study evaluating delirium in elderly with hip fractures in Thailand. The finding could lead to identifying the high-risk patients and preventive strategy development. Comprehensive geriatric assessment was performed to evaluate physical, psychomental, function, social, and environment problems in every patient. The delirium diagnosis is usually under-recognized and difficult to diagnose especially in those with preexisting cognitive impairment or hypoactive delirium. In this study, the diagnosis was made by daily assessment and confirmed by senior geriatricians who are experienced in such diagnosis. In addition, the health outcomes, length of stay and

healthcare cost, which were the impact of delirium, were all investigated.

There are several limitations for the present study. First, there was the relative small sample size of the population. This might lead to the lack of significant difference in the health related outcomes, length of stay, and medical care cost between delirium and non-delirium groups. However, previous prospective studies also had small sample size of subjects[15,17]. Second, patients in Siriraj Hospital, which is a medical school, might be more vulnerable to develop delirium because they might have more comorbid conditions. However, any elderly suffering hip fracture tended to be frail and have multiple comorbid diseases. In addition, some contamination of non-pharmacologic management by a geriatric team might alleviate the delirium occurrence. Finally, long-term follow-up at six to 12 months was not performed in this study to investigate the long-term impact of delirium to mortality, cognitive and functional status.

Prevention is an important strategy to reduce delirium. Multi-component intervention and proactive geriatric consultation preoperatively or within 24 hours of surgery in patients with hip fracture have been studied to reduce delirium by over one-third, and reduced severe delirium by over one-half[20,21]. Identifying high-risk patients who might benefit from targeted delirium prevention measures during the perioperative period is a crucial approach. In this study, patients with older age, poor functional status, dementia, or cognitive impairment should be screened for delirium and interventions to prevent delirium should be focus on these vulnerable patients. Pain should be adequately controlled and sedative drugs should be avoided or used with particular precautions.

What is already known on this topic?

Delirium is common in elderly hip fracture undergoing hip surgery.

Predisposing factors and precipitating factors for delirium have been proposed.

What this study adds?

Older age, poor premorbid function, dementia/ cognitive impairment, NSAIDs and sedative use were associated factors of delirium in older patients with hip fracture.

Potential conflicts of interest

None.

References

1. Neuman MD, Silber JH, Magaziner JS, Passarella MA, Mehta S, Werner RM. Survival and functional outcomes after hip fracture among nursing home residents. JAMA Intern Med 2014; 174: 1273-80.
2. Brozek W, Reichardt B, Kimberger O, Zwerina J, Dimai HP, Kritsch D, et al. Mortality after hip fracture in Austria 2008-2011. Calcif Tissue Int 2014; 95: 257-66.
3. Vaseenon T, Luevitoonvechkij S, Wongtriratanachai P, Rojanasthien S. Long-term mortality after osteoporotic hip fracture in Chiang Mai, Thailand. J Clin Densitom 2010; 13: 63-7.
4. Gruber-Baldini AL, Zimmerman S, Morrison RS, Grattan LM, Hebel JR, Dolan MM, et al. Cognitive impairment in hip fracture patients: timing of detection and longitudinal follow-up. J Am Geriatr Soc 2003; 51: 1227-36.
5. Lundstrom M, Edlund A, Bucht G, Karlsson S, Gustafson Y. Dementia after delirium in patients with femoral neck fractures. J Am Geriatr Soc 2003; 51: 1002-6.
6. Marcantonio ER, Flacker JM, Michaels M, Resnick NM. Delirium is independently associated with poor functional recovery after hip fracture. J Am Geriatr Soc 2000; 48: 618-24.
7. Inouye SK, van Dyck CH, Alessi CA, Balkin S, Siegal AP, Horwitz RI. Clarifying confusion: the confusion assessment method. A new method for detection of delirium. Ann Intern Med 1990; 113: 941-8.
8. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 4th ed. Washington, DC: American Psychiatric Association; 1994.
9. van Swieten JC, Koudstaal PJ, Visser MC, Schouten HJ, van Gijn J. Interobserver agreement for the assessment of handicap in stroke patients. Stroke 1988; 19: 604-7.
10. Charlson ME, Pompei P, Ales KL, MacKenzie CR. A new method of classifying prognostic comorbidity in longitudinal studies: development and validation. J Chronic Dis 1987; 40: 373-83.
11. Siri S, Okanurak K, Chansirikanjana S, Kitayaporn D, Jorm AF. Modified Informant Questionnaire on Cognitive Decline in the Elderly (IQCODE) as a screening test for dementia for Thai elderly. Southeast Asian J Trop Med Public Health 2006; 37: 587-94.
12. Train the Brain Forum Committee. Thai Mental State Examination (TMSE). Siriraj Hosp Gaz

1993; 45: 359-74.
13. Berggren D, Gustafson Y, Eriksson B, Bucht G, Hansson LI, Reiz S, et al. Postoperative confusion after anesthesia in elderly patients with femoral neck fractures. Anesth Analg 1987; 66: 497-504.
14. Gustafson Y, Berggren D, Brannstrom B, Bucht G, Norberg A, Hansson LI, et al. Acute confusional states in elderly patients treated for femoral neck fracture. J Am Geriatr Soc 1988; 36: 525-30.
15. Praditsuwan R, Limmathuroskul D, Assanasen J, Pakdeewongse S, Eiamjinnasuwat W, Sirisuwat A, et al. Prevalence and incidence of delirium in Thai older patients: a study at general medical wards in Siriraj Hospital. J Med Assoc Thai 2012; 95 (Suppl 2): S245-50.
16. Rade MC, Yadeau JT, Ford C, Reid MC. Postoperative delirium in elderly patients after elective hip or knee arthroplasty performed under regional anesthesia. HSS J 2011; 7: 151-6.
17. de Castro SM, Unlu C, Tuynman JB, Honig A, van Wagensveld BA, Steller EP, et al. Incidence and risk factors of delirium in the elderly general surgical patient. Am J Surg 2014; 208: 26-32.
18. Lundstrom M, Stenvall M, Olofsson B. Symptom profile of postoperative delirium in patients with and without dementia. J Geriatr Psychiatry Neurol 2012; 25: 162-9.
19. Neuman MD, Rosenbaum PR, Ludwig JM, Zubizarreta JR, Silber JH. Anesthesia technique, mortality, and length of stay after hip fracture surgery. JAMA 2014; 311: 2508-17.
20. Zhang H, Lu Y, Liu M, Zou Z, Wang L, Xu FY, et al. Strategies for prevention of postoperative delirium: a systematic review and meta-analysis of randomized trials. Crit Care 2013; 17: R47.
21. Marcantonio ER, Flacker JM, Wright RJ, Resnick NM. Reducing delirium after hip fracture: a randomized trial. J Am Geriatr Soc 2001; 49: 516-22.

อุบัติการณ์และปัจจัยเสี่ยงของการเกิดอาการซึมสับสนเฉียบพลันในผู้ป่วยสูงอายุที่มีกระดูกข้อสะโพกหักที่เข้ารับการรักษาในโรงพยาบาลศิริราช

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วัตถุประสงค์: *เพื่อหาอุบัติการณ์และปัจจัยที่สัมพันธ์กับการเกิดอาการซึมสับสนเฉียบพลันในผู้ป่วยสูงอายุที่มีกระดูกข้อสะโพกหักที่เกิดจากการหกล้มที่เข้ารับการรักษาในโรงพยาบาล*

วัสดุและวิธีการ: *ผู้ป่วยที่มีกระดูกข้อสะโพกหักจากการหกล้ม 80 ราย ที่เข้ารับการรักษาในโรงพยาบาลศิริราชเพื่อผ่าตัดข้อสะโพก ผู้นิพนธ์เก็บข้อมูลพื้นฐานของผู้ป่วย ความสามารถในการประกอบกิจวัตรประจำวัน สภาวะการรู้คิด ปัจจัยด้านการรักษา ผลทางคลินิก ระยะเวลาการนอนรับการรักษาในโรงพยาบาล ค่าใช้จ่ายในการรักษาอาการซึมสับสนเฉียบพลันได้รับการประเมินโดยแพทย์ด้านเวชศาสตร์ผู้สูงอายุที่มีประสบการณ์ โดยใช้เกณฑ์การวินิจฉัย DSM-IV*

ผลการศึกษา: *ผู้ป่วย 36 ราย (ร้อยละ 45) เกิดอาการซึมสับสนเฉียบพลัน โดยมีอาการแบบวุ่นวายและแบบซึม 24 ต่อ 12 ราย อาการซึมสับสนเฉียบพลันเกิดก่อนและหลังการผ่าตัด 18 ต่อ 18 ราย จากการวิเคราะห์การถดถอยโลจิสติกพบว่าอายุ คะแนนการทดสอบ TMSE แรกรับเข้าโรงพยาบาล คะแนน modified IQCODE คะแนน mRS ก่อนเจ็บป่วย การได้รับยาต้านอักเสบที่ไม่ใช่สเตียรอยด์ตามเวลา และการได้รับยานอนหลับ มีความสัมพันธ์กับการเกิดอาการซึมสับสนเฉียบพลัน ผู้ป่วยที่มีและไม่มีอาการซึมสับสนเฉียบพลัน ไม่พบว่ามีการเกิดภาวะแทรกซ้อนหลังผ่าตัด ระยะเวลาในการนอนโรงพยาบาล ความสามารถในการประกอบกิจวัตรประจำวันขณะจำหน่าย อัตราการเสียชีวิต และค่าใช้จ่ายในการรักษาในโรงพยาบาล แตกต่างกัน*

สรุป: *อาการซึมสับสนเฉียบพลันพบได้บ่อยในผู้ป่วยสูงอายุที่มีกระดูกข้อสะโพกหักที่เข้ารับการผ่าตัด อายุ ความสามารถในการประกอบกิจวัตรประจำวันก่อนเจ็บป่วย ภาวะสมองเสื่อม/การบกพร่องของการรู้คิด การได้รับยาต้านอักเสบที่ไม่ใช่สเตียรอยด์ตามเวลา และการได้รับยานอนหลับ มีความสัมพันธ์กับการเกิดอาการซึมสับสนเฉียบพลัน ควรมีการค้นหาผู้ป่วยที่มีปัจจัยเสี่ยงสูงอย่างเป็นประจำ และดำเนินกลวิธีในการลดการเกิดอุบัติการณ์การเกิดและความรุนแรงของอาการซึมสับสนเฉียบพลัน*