Delirium in Hospitalized Elderly Patients of Thailand; Is the Figure Underrecognized?

Panita Limpawattana MD*, Sumitr Sutra MD**,
Yupa Thavornpitak MSc***, Kittisak Sawanyawisuth PhD****,
Jarin Chindaprasirt MD*****, Pisaln Mairieng MD******

** Division of Geriatric Medicine, Internal Medicine Department, Faculty of Medicine, Khon Kaen University, Khon Kaen, Thailand*
*** Department of Pediatrics, Faculty of Medicine, Khon Kaen University, Khon Kaen, Thailand*
**** Department of Biostatistics and Demography, Faculty of Public Health, Khon Kaen University, Khon Kaen, Thailand*
***** Division of Ambulatory Medicine, Internal Medicine Department, Faculty of Medicine, Khon Kaen University, Khon Kaen, Thailand*
****** Division of Oncology, Internal Medicine Department, Faculty of Medicine, Khon Kaen University, Khon Kaen, Thailand*
******* Division of Gastroenterology, Internal Medicine Department, Faculty of Medicine, Khon Kaen University, Khon Kaen, Thailand*

Background: *Delirium is a frequent complication associated with hospitalization of older adults leading to serious complications but it is potentially preventable. The overall data regarding admission rates and its impact in Thai geriatrics are limited.*
Objective*: To identify admission, mortality rates of older persons with delirium and its consequences.*
Material and Method*: Information on illness of inpatients and casualties came from hospitals nationwide and from hospital withdrawals from the three health insurance schemes in fiscal 2010. The data included 96% of the population. The data were analyzed by age groups in delirious patients.*
Results: *Delirium occurred in 11,410 of all admissions; contributing admission and mortality rates of 155.4 and 6.4/100,000 older persons. These figures increased with age. The average length of stay in persons with and without delirium were 22.3 and 5.4 days and the average hospital charges were 53,174 and 18,230.8 Baht, respectively.*
Conclusion*: The admission rate of patients with delirium was lower than prior reports; underdetection and underreport should be considered. Admission and mortality rates rose with age. There was an increase in length of stay and hospital charges.*

Keywords*: Delirium, Confusion, Confusional state, Clinical epidemiology, Elderly*

J Med Assoc Thai 2012; 95 (Suppl. 7): S224-S228
Full text. e-Journal: *http://jmat.mat.or.th*

Delirium is an acute change in consciousness, attention, cognition and perception and tends to fluctuate during the course of the day[1]. It is one of the common geriatric syndromes in hospitalized elderly. Its prevalence on hospital admission is varied from 11-33%. The incidence rate during hospitalization in general ward is 3-56% and tends to increase in patients at an age of 65 or over, male patients, patients with cognitive impairment, postoperative patients particularly in post hip fracture and vascular surgery, and those in intensive care[2-4].

The diagnosis of delirium is mainly on clinical judgment which is based on the Diagnostic and Statistical Manual of Mental Disorders (DSM IV) criteria. No diagnostic test is available currently. The Confusion Assessment Method (CAM) algorithm, however, is a short, accurate and widely used tool to detect delirium. It has been validated in many countries including Thailand with a sensitivity of 94-100%, specificity of 90-100% and high inter-rater reliability[5,6].

Delirium can impact in increased mortality ranging from 25% to 33%, greater morbidity, persistent functional decline, higher nursing time per patient, greater healthcare costs, longer length of hospital stay, and higher rates of nursing home placement[1,3,7]. Previous studies reported a doubled discharge

Correspondence to:
Limpawattana P, Division of Geriatric Medicine, Internal Medicine Department, Faculty of Medicine, Khon Kaen University, Muang District, Khon Kaen 40002, Thailand.
Phone: 043-363-664
E-mail: lpanit@kku.ac.th

mortality, eight days longer hospitalization and worsening functional capacity at 6 and 12 months post discharge. The patient can experience an unpleasant feeling after resolving from delirium. It is found that a third of persons with delirium can have persistent delirium and increased risk of developing dementia[3].

Although delirium is a medical emergency that may lead to serious complications, it is a potentially preventable clinical syndrome among the elderly[1,8]. A recent study in a medical school hospital in Thailand showed the high prevalence rate of hospitalized older persons with delirium of 56.1% based on a Thai version of the CAM algorithm. Most cases (46.9%) were admitted to internal medicine units and a third (28.6%) had multiple co-morbidities[6].

Objective

Given the medical school hospital being a tertiary care hospital, there are likely to have more complicated cases in addition to greater risks for developing delirium than expected in general clinical practice. Furthermore, the overall prevalence of delirium that includes general hospitals and consequences of delirium at this level of care are not yet known. Thus, the primary objective of this study is to identify the admission rate of older patients with delirium as the prevalence rate cannot be identified from the current database. The secondary objective is to identify the impact of delirium in the context of mortality rate, length of hospital stay and healthcare costs.

Material and Method

Patient population

Data included inpatient Medical Expensing Forms for the fiscal year 2010 (October 1, 2009 and September 31, 2010) from the National Health Security Office (NHSO), Thailand, and inpatient data from the Civil Servants Benefit System from the Comptroller General's Department and the Social Security Office.

Data received by the analyst team was checked for accuracy by looking for (a) overlapping information (b) visit dates (c) missing items (d) incorrect coding and (e) dating with the correct fiscal year.

Patients were classified mainly into 2 groups: older persons who aged 61 years old or over with delirium (ICD-10-F05) and ones without delirium as either a primary or secondary diagnosis.

Patient demographics and clinical characteristics

Baseline characteristics of older patients including age, gender, level of hospital, region of hospital, admission rate, mortality rate, and common causes of hospitalization were captured from enrollment data.

Outcome measures

The present study outcomes were admission rate and mortality rate per 100,000 populations in the same age groups; 61-70, 71-80, and over 80 years. Length of stay in days and healthcare costs in Baht were compared between patients classified as positive delirium patients and those negative for delirium.

Statistical analysis

The explanation of variables, tables of frequency enumeration and interrelationships were written using the SPSS program and checked before analyzing. After analyzing the data, the research team passed the primary analysis to ten medical specialists in order to check the validity of the information. Upon confirmation of validity, the data were compared to the Ministry of Public Health's Statistics Report 2010 for trend congruence as well as the hospital's mortality reporting for each age and disease group for comparison with the National Death Registration of the Registry Administration, Ministry of Interior Affairs[9].

Ethics approval was provided by Ethic Committee of Medicine Faculty, Khon Kaen University under the respect of Helsinki Declaration.

Results

Baseline characteristics and admission rates

Delirium occurred in 11,410 of all admissions, contributing to admission rates of 155.4 per 100,000 older persons. The admission rates had been increasing in relation to increasing age (Fig. 1). The admission rate per 100,000 population of the top three causes of delirium were diseases of respiratory tract (21.9), followed by diseases of genitourinary system (15.2) and circulatory system (13.8). This population represented an acutely ill older population of hospitalized patients mainly in the internal medicine wards. Male was the predominant sex. The average male-to-female ratio was 1.2 and was 1.5, 1.3, and 1.3 at age group of 61-70, 71-80, and over 80.

Consequences of delirium

a) Mortality rate

The mortality rates of hospitalized older persons with delirium were 6.1 per 100,000 older persons. The figures arose dramatically from age group of 61-70 years (Fig. 2).

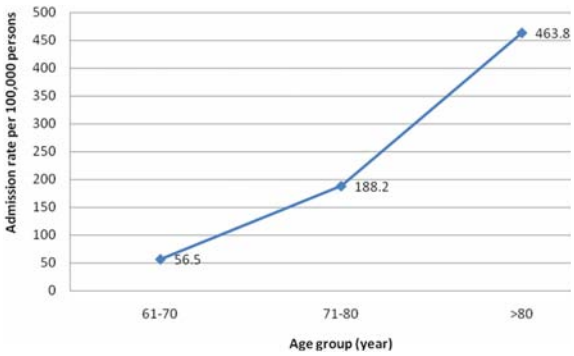

Fig. 1 Admission rate per 100,000 of delirium by age group

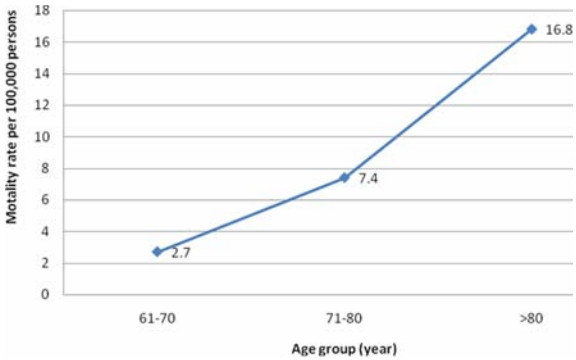

Fig.2 The mortality rate of hospitalized older persons with delirium

a. Length of stay

The averages length of stay of older persons with delirium is 22.3 days. The duration among 3 age groups was 18.5, 18.20 and 29.2 days in 61-70, 71-80, and over 80 years of age. In comparison with older persons without delirium, the length of stay was about one-fourth of the ones with delirium (5.4 days). Specifically, the older persons who were admitted with femur fractures, there was an increase in length of stay about 5 days, from 13.1 days to 17.9 days.

b. Healthcare costs

The averages hospital charge per admission of older persons with delirium was 53,174 Baht. In contrast, of the persons without delirium was 18,230.80 Baht. Comparing similar diagnoses, the hospital charges of older persons who were admitted with femur fracture with delirium was 59,324.50 Baht whereas in persons without delirium was 43,482.90 Baht.

Discussion

Older patient hospitalization with delirium; is the figure underrecognized?

The admission rate of delirium based on these data was extremely rare which was found in only 56.5, 188.2 and 463.8 admissions per 100,000 persons in the same age groups including both sexes. The numbers, however, rose greatly with increasing age, and the male was the predominant sex supporting the evidence that age and male sex are two of the risk factors of developing delirium[1,3]. Comparing this to other studies, delirium is a common clinical syndrome that can be found throughout the healthcare system. It does not imply that delirium is uncommon in Thai geriatric patients but under-recognition may be the issue. Regarding the Yale-New Haven hospital study (1988-89), physicians and nurses failed to recognize this condition in 65% and 43% cases. Mostly, healthcare workers tend to rely on the presence or absence of disorientation to detect delirium and miss the assessment in other important domains. Nurses play a key role to detect delirium. Identifiable independent risk factors for under-recognition by nurses are hypoactive delirium, age 80 years and older, vision impairment, and dementia. In addition, the greater numbers of these risk factors, the higher rates of unrecognized delirium[10,11].

The Confusional Assessment Method (CAM) is a simple, widely used and highly accurate delirium diagnostic tool[1,5]. A Thai-version of CAM also provides good performance of delirium detection in the clinical setting[6]. Therefore, enhancement of delirium education among physicians and nurses about delirium, cognitive assessment, and factors associated with poor detection, should include implementing a CAM algorithm in all hospitalized older persons particularly in medical, surgical and intensive care wards.

The consequences of delirium

The findings of the present study support previous studies that delirium increases in mortality, hospital charges and length of stay[1,2,7,12]. The estimated effects influencing outcomes for delirium, however are influenced by study designs. Based on these data, it was estimated that of every 100 hospitalized older persons with delirium 4.7, 3.9, and 3.6 persons in age group 61-70, 71-80 and over than 80 years would die. These figures, however, were lower than recent other published evidence that could be due to some limitations of study. In term of length of stay, an average increase of approximately 16 days in older persons with delirium was found in the present

study. The impact of delirious persons in the context of healthcare cost is three-fold higher than the ones without delirium.

Given the burden associated with delirium, and there are many studies supporting the benefits of delirium prevention, implementing intervention to prevent or treating delirium should be worthwhile. The Hospital Elder Life Program (HELP), the well-known delirium prevention trial, is a multi-component approach to reduce risk factors of delirium such as reality orientation and therapeutic activity protocols for cognitive impairment, a non-pharmacologic sleep protocol and sleep enhancement protocol for sleep deprivation and an early mobilization protocol and minimized immobilizing equipment for immobilization[8]. It was proven to reduce frequency and complications including length of stay in hospital, hospital costs and long term care. Therefore, hospital policy should adopt delirium prevention programs for hospitalized elderly patients particularly in high risk groups. This would lessen clinical and financial consequences.

Study limitations

There are some limitations of the present study. Firstly, because of the limited data, it is impossible to analyze prevalence rates of delirium by only admission rates. Secondly, there is the potential for misclassification of data collection wherein some patients were either inappropriately included or excluded based on ICD-10 codes. The admission rates of delirium are much lower than prior studies; suggesting that under-diagnosis or under-coding is possible. Thirdly, some data associated with risk factors of delirium are unavailable. The results of the present study need to be interpreted in the context of its limitations. Finally, the impact of delirium on some aspects is lacking, such as functional assessment, caregiver burden, and post-hospital costs.

Conclusion

Admission rates of older persons with delirium was relatively lower than previous studies, under-recognition should be of concern. Admission rates and mortality rates of delirium rose with age. Its consequence in older persons with delirium in terms of length of stay and hospital charges was distinctly higher than those patients without delirium. Enhancing delirium education to increase early detection, treatment and prevention should be done in the medical professions in particular, nurses who play a key role in delirium care.

Acknowledgement

The authors wish to thank the support of the Khon Kaen University Publication Clinic, Research and Technology Transfer Affairs, Khon Kaen University, for their assistance.

Potential conflicts of interest

None.

References

1. Inouye SK. Delirium in older persons. N Engl J Med 2006; 354: 1157-65.
2. Bakker RC, Osse RJ, Tulen JH, Kappetein AP, Bogers AJ. Preoperative and operative predictors of delirium after cardiac surgery in elderly patients. Eur J Cardiothorac Surg 2012; 41: 544-9.
3. Young J, Inouye SK. Delirium in older people. BMJ 2007; 334: 842-6.
4. Michaud L, Bula C, Berney A, Camus V, Voellinger R, Stiefel F, et al. Delirium: guidelines for general hospitals. J Psychosom Res 2007; 62: 371-83.
5. 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.
6. Wongpakaran N, Wongpakaran T, Bookamana P, Pinyopornpanish M, Maneeton B, Lerttrakarnnon P, et al. Diagnosing delirium in elderly Thai patients: utilization of the CAM algorithm. BMC Fam Pract 2011; 12: 65.
7. Leslie DL, Inouye SK. The importance of delirium: economic and societal costs. J Am Geriatr Soc 2011; 59(Suppl 2): S241-3.
8. Inouye SK, Bogardus ST Jr, Baker DI, Leo-Summers L, Cooney LM Jr. The Hospital Elder Life Program: a model of care to prevent cognitive and functional decline in older hospitalized patients. Hospital Elder Life Program. J Am Geriatr Soc 2000; 48: 1697-706.
9. Hollenberg CH. The effect of health care reform on academic medicine in Canada. Editorial Committee of the Canadian Institute for Academic Medicine. CMAJ 1996; 154: 1483-9.
10. Inouye SK, Foreman MD, Mion LC, Katz KH, Cooney LM Jr. Nurses' recognition of delirium and its symptoms: comparison of nurse and researcher ratings. Arch Intern Med 2001; 161: 2467-73.
11. Rice KL, Bennett M, Gomez M, Theall KP, Knight M, Foreman MD. Nurses' recognition of delirium in the hospitalized older adult. Clin Nurse Spec

2011; 25: 299-311.
12. Milbrandt EB, Deppen S, Harrison PL, Shintani AK, Speroff T, Stiles RA, et al. Costs associated with delirium in mechanically ventilated patients. Crit Care Med 2004; 32: 955-62.

ภาวะสับสนฉับพลันในผู้สูงอายุที่นอนพักรักษาในโรงพยาบาลของประเทศไทย

ปณิตา ลิมปะวัฒนะ, สุมิตร สุตรา, ยุพา ถาวรพิทักษ์,กิตติศักดิ์ สวรรยาวิสุทธิ์, จาริญญ์ จินดาประเสริฐ, พิศาล ไม้เรียง

ภูมิหลัง*: ภาวะสับสนฉับพลันเป็นภาวะแทรกซ้อนที่พบบ่อยในผู้ป่วยสูงอายุที่ได้รับการรักษาในโรงพยาบาล ภาวะนี้ส่งผลให้เกิดภาวะแทรกซ้อนที่รุนแรงตามมา อย่างไรก็ตามภาวะนี้สามารถป้องกันได้ ปัจจุบันข้อมูลภาพรวมอัตราการนอนพักรักษาในโรงพยาบาลและผลกระทบของภาวะสับสนฉับพลันของผู้สูงอายุในประเทศไทยยังมีไม่มาก*

วัตถุประสงค์*: เพื่อทราบอัตราการนอนพักรักษาในโรงพยาบาลของภาวะสับสนฉับพลันในผู้สูงอายุไทย และผลกระทบต่ออัตราการเสียชีวิตระยะเวลาการนอนและค่าใช้จ่ายในการรักษา*

วัสดุและวิธีการ*: ข้อมูลการเจ็บป่วยของผู้ป่วยในและผู้ที่เสียชีวิตในโรงพยาบาล มาจากข้อมูลที่โรงพยาบาลส่งเบิกจ่ายจากระบบประกันสุขภาพ 3 แหล่ง คือ ระบบประกันสุขภาพถ้วนหน้า ระบบประกันสังคมและระบบสวัสดิการรักษาพยาบาลข้าราชการในปีงบประมาณปี พ.ศ. 2553 ซึ่งครอบคลุมประชากร 62 ล้านคน (ร้อยละ 96 ของประชากรของประเทศ) โดยวิเคราะห์ตามกลุ่มอายุและปัญหาสุขภาพในผู้ที่มีภาวะสับสนฉับพลัน*

ผลการศึกษา*: ผู้สูงอายุที่นอนพักในโรงพยาบาลที่มีภาวะสับสนฉับพลันมี 11,410 ครั้ง คิดเป็นอัตราการนอนพักรักษาและอัตราการเสียชีวิตในโรงพยาบาลเท่ากับ 155.4 ครั้งและ 6.1 คนต่อประชากร 100,000 คน โดยพบอัตราดังกล่าวสูงขึ้นเมื่ออายุมากขึ้น ระยะเวลาเฉลี่ยในการนอนพักรักษาในโรงพยาบาลในกลุ่มที่มีภาวะสับสนฉับพลันเท่ากับ 22.3 วัน กลุ่มที่ไม่มีภาวะสับสนฉับพลันเท่ากับ 5.4 วัน ค่ารักษาพยาบาลเฉลี่ยในกลุ่มที่มีภาวะสับสนฉับพลันและไม่มีภาวะสับสนฉับพลันเท่ากับ 53,174 บาทและ 18,230.80 บาท ตามลำดับ*

สรุป*: อัตราการนอนพักรักษาในโรงพยาบาลด้วยภาวะสับสนฉับพลันต่ำกว่าข้อมูลที่ผ่านมา อาจเนื่องจากการไม่ได้รับการวินิจฉัยและไม่ได้รับรายงาน อัตราการนอนพักรักษาและอัตราการเสียชีวิตในโรงพยาบาลด้วยภาวะสับสนฉับพลันพบสูงขึ้นตามอายุที่มากขึ้น ผู้สูงอายุที่มีภาวะสับสนฉับพลันมีระยะเวลานอนเฉลี่ยในโรงพยาบาลและค่ารักษาพยาบาลสูงกว่าผู้ป่วยที่ไม่มีภาวะสับสนฉับพลัน*