Impacts of Nosocomial Infection among Elderly Patients in Inburi Hospital

Premruedee Pancharti MNS*,
Nanta Leksawas RN**, Kanokporn Sukamwang RN**,
Worapot Tantisiriwat MD***, Somwang Danchaivijitr MD****

*Inburi Hospital, Sing Buri, **Faculty of Nursing, Chiang Mai University,Chiang Mai,
***Department of Medicine, Faculty of Medicine, Vachira hospital, Srinagarindviroj University, Bangkok,
****Department of Medicine, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok

Objectives: *To evaluate the length of stay, total medical expenditure, cost of antibiotics for nosocomial infections (NIs) and NI fatality rate of elderly patients admitted to Inburi Hospital.*
Material and Method: *A descriptive study, data from analyzing NI surveillance forms of 50 elderly patients admitted to Inburi Hospital with NI from February to May 2002.*
Results: *The average length of stay of the samples was 22.9 days, medical expenditure was 67,265 baht per patient, cost of antimicrobial drugs was 9,128.90 baht per patient and case fatality rate was 42%.*
Conclusion: *The study revealed that NI in the elderly were associated with increased length of stay, costs of antimicrobial agents, total medical expenditure and a high case fatality rate.*

Keywords: *Impacts, Nosocomial infection, Elderly patients*

J Med Assoc Thai 2005; 88 (Suppl 10): S83-5
Full text. e-Journal: *http://www.medassocthai.org/journal*

The proportion of elderly population has increased sharply during the past decades due to improved environment and health care. In Thailand, 9% of the population in 2000 were elderly (5.3 million)[1]. Elderly patients need more medical care and more hospital admission. The duration of hospitalization, costs for treatment and mortality rates among elderly patients are higher compared to younger patients[2,3].

Nosocomial infection (NI) is an important cause of death in hospitalized patients, especially in the elderly patients[4-9]. In 2000, there were 268 cases of N.I. of which 171 were elderly in Inburi Hospital. To elucidate the impacts of NI in aged patients in the hospital, a prospective study was done to determine the length of study, expenditures and mortality among elderly patients who suffered from NI.

Material and Method

During February and May 2002, all patients aged over 60 years who had NI were enrolled. Standard definitions of NI were used. The data collection forms were verified by experts with a validity index of 0.9 and inter rater reliability of 1. Data on length of stay, hospital costs, antimicrobial costs and case fatality rate were collected. Descriptive statistics were used in the analysis.

Correspondence to : Danchaivijitr S, Department of Medicine, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok 10700, Thailand. E-mail: sisdc@mahidol.ac.th

Results

During the study period, there were 50 elderly patients with NI. Twenty-six patients were female and 24 were male with an average age of 72 years. Thirty-eight patients (76%) had underlying diseases. There were 81 episodes of NI in this group. The mean length of hospitalization is shown in Table 1. The mean length of hospital stay of the elderly with 1 episode of NI was 17.0 days and rose to 25.6 and 50.5 days of patients who had 2 and 3 or more episodes respectively. The mean of total hospital costs was 41,120 baht and 160,164 baht for patients with 1 and 3 or more episodes of NI respectively (Table 2). The antimicrobial costs for treatment of NI ranged from 0-39,713 baht with a mean of

Table 1. Length of stay of the 50 NI patients (days)

Episodes of NI	Number of patients (N=50)	Mean	Length of stay (95% confidence interval)
1	33	17.0	13.7-20.3
2	11	25.6	16.6-34.7
≥ 3	6	50.5	28.1-72.9
Average		22.9	18.3-27.5

Table 2. Total hospital cost of the 50 patients (baht)*

Episodes of NI	Number of patients (N=50)	Mean	Hospital cost (95% confidence interval)
1	33	41,120.2	25,098.20-57,142.10
2	11	95,027.1	45,550.20-144,503.90
≥ 3	6	160,164.8	85,050.60-235,279.10
Average		67,265.0	47,878.70-86,651.30

*40 baht = 1 US dollar

Table 3. Antimicrobial cost for treatment of NI

Episodes of NI (N=50)	Mean	Antimicrobial cost (95% confidence interval)
1 (33)	4,397.6	905.1-7,889.9
2 (11)	15,320.2	0.0-32,612.7
≥ 3 (6)	23,800.4	7,887.7-39,713.2
Average	9,128.9	4,441.2-13,816.6

Table 4. Fatality rates of elderly patients with NI (%)

Number of infection	Number of patients (N=50)	Fatality
1	33	36.4
2	11	45.5
≥ 3	6	66.7
Average		42.0

9,128 baht (Table 3). The mean fatality rate was 42.0% (Table 4).

Discussion

The present study illustrated the impacts of NI in elderly patients in a secondary medical care centre with 243 beds. In 4 months, there were 50 cases of elderly patients who suffered from nosocomial infection. The consequences of NI were substantial. The length of hospital stay was prolonged to an average of 22.9 days in the patients with NI. The elderly who had 3 or more episodes of NI were admitted for 50 days (Table 1). The occupation of hospital beds by this group reduces the capacity of the hospital in admitting patients. The average hospital cost for 1 elderly patient with NI was 67,265 baht (Table 2). Annual hospital expenditure on the elderly with NI in this small hospital was about 10 million baht, a great burden for the hospital. The cost of antimicrobials treatment was as high as 9,128 baht for one patient or about 1.4 million baht per year (Table 3). The fatality rate of NI in elderly patients was as high as 42.0% (Table 4). The fatality rates rose to 62.5% in patients aged 80 years or over and to 66.7% in patients with 3 or more episodes of NI.

Conclusion

Elderly patients who had NI in Inburi Hospital were admitted for 22.9 days. The mortality rate in this group was 42.0%. Hospital expenditures and antimicrobial costs for this group were substantial.

Acknowledgements

The authors wish to thank the director and staff members of Inburi Hospital for excellent assistance. The study was supported by Mahidol University research fund.

References

1. Jitthapunkun S. Health problems among Thai elderly. Health Research Institution, 2001.
2. Bochicchio GV, Joshi M, Knorr KM, Scalea TM. Impact of nosocomial infections in trauma: does age make a difference? J Trauma 2001; 50: 612-7; discussion 617-9.
3. Plowman R, Graves N, Griffin MA, Roberts JA, Swan AV, Cookson B, et al. The rate and cost of hospital-acquired infections occurring in patients admitted to selected specialties of a district general hospital in England and the national burden imposed. J Hosp Infect 2001; 47: 198-209.
4. Lima NL, Pereira CR, Souza IC, Facanha MC, Lima

AA, Guerrant RL, et al. Selective surveillance for nosocomial infections in a Brazilian hospital. Infect Control Hosp Epidemiol 1993; 14: 197-202.
5. Zastrow KD, Schoneberg I. Nosocomial infection as the cause of death. Gesundheitswesen 1994; 56: 122-5.
6. Taylor ME, Oppenheim BA. Hospital-acquired infection in elderly patients. J Hosp Infect 1998; 38: 245-60.
7. Garibaldi RA. Residential care and the elderly: the burden of infection. J Hosp Infect 1999; 43: S9-18.
8. Stephan F, Cheffi A, Bonnet F. Nosocomial infections and outcome of critically ill elderly patients after surgery. Anesthesiol 2001; 94: 407-14.
9. Stolley JM, Buckwalter KC. Iatrogenesis in the elderly: Nosocomial infections. J Geront Nurs 1991; 17: 30-4.

ผลกระทบของโรคติดเชื้อในโรงพยาบาลในผู้ป่วยสูงอายุในโรงพยาบาลอินทร์บุรี

เปรมฤดี พันธชาติ, นันทา เล็กสวัสดิ์, กนกพร สุคำวัง, วรพจน์ ตันติศิริวัฒน์, สมหวัง ด่านชัยวิจิตร

วัตถุประสงค์ : *ศึกษาระยะเวลาการนอนในโรงพยาบาล ค่าใช้จ่ายในโรงพยาบาล ค่ายาต้านจุลชีพ และอัตราตายของผู้ป่วยโรคติดเชื้อในโรงพยาบาลในผู้ป่วยสูงอายุในโรงพยาบาลอินทร์บุรี*

วัสดุและวิธีการ *: ศึกษาเชิงพรรณนาในผู้ป่วยอายุมากกว่า 60 ปีที่มีโรคติดเชื้อในโรงพยาบาลระหว่างเดือนกุมภาพันธ์ - พฤษภาคม พ.ศ. 2545*

ผลการศึกษา : *ผู้ป่วยที่ศึกษา 50 ราย ระยะเวลานอนโรงพยาบาลคือ 22.9 วัน มีค่าใช้จ่ายในโรงพยาบาล 67,265 บาทต่อราย ค่ายาต้านจุลชีพ 9,128 บาทต่อราย และมีอัตราตาย 42.0%*

สรุป : *การติดเชื้อในโรงพยาบาลในผู้ป่วยสูงอายุในโรงพยาบาลต้องนอนโรงพยาบาลนาน เสียค่าใช้จ่ายและมีอัตราตายสูง*