

A Comparative Analysis of Diabetic and Non-diabetic Patients with Hip Fractures in a Medical Center in Taiwan from 1991-2007

Siu-Pak Lee MD¹, Ting-Ting See MD², Hua-Fen Chen MD, MSC²

摘要

(*Taiwan Geriatrics & Gerontology* 2008;3(4):●-●)

Key words: diabetes mellitus; hip fracture

Several excellent articles regarding osteoporotic fractures were published recently in this journal (May 2008). Among them, the consensus seemed to be that diabetes mellitus was an emerging risk factor for certain types of fracture. However, there was little data regarding hip fracture in diabetic patients. We analyzed all patients admitted to Far Eastern Memorial Hospital with a primary diagnosis hip fracture (ICD-9 code 820) from January 1, 1991 to December 31, 2007. Data were obtained from the hospital discharge ICD database. The statistical methods employed were Student's t-test for the numerical variables and chi-square test for the categorical variables. Of the 4320

hip fractures admissions, 949 also had a diagnosis of diabetes mellitus (ICD-9 code 250). The diabetic group (mean age 72.6±10.4years) was significantly older than the non-diabetic group (mean age 67.5±25.5years) (p<0.0001). The percentage of female patients was higher in the diabetic (67.6%) than in the non-diabetic group (49.9%) (p<0.0001). The percent of non-transport accidents (i.e., fractures resulting from something other than vehicular accident) was much higher in the diabetic group (90.5%) than in the non-diabetic group (77.2%) (p<0.0001). Patients underwent two types of operations for hip fracture: open reduction of fracture with internal fixation of femur (ICD-9 code

¹Section of Neurology and ²Endocrinology and Metabolism, Department of Internal Medicine, Far Eastern Memorial Hospital

*Correspondence to: Dr. Ting-Ting See Section of Endocrinology and Metabolism, Department of Internal Medicine, Far Eastern Memorial Hospital, 21, Section 2, Nan-Ya South Road, Panchiao City, Taipei 220, Taiwan, R.O.C.

E-mail: ting2see@ms74.hinet.net

79.35) or partial hip replacement (ICD-9 code 81.52). Fewer (68.7%) diabetic patients than non-diabetic patients (74.8%) underwent the less invasive open reduction of fracture with internal fixation of femur ($p=0.0008$). There was no difference in the type of hip fracture, whether intertrochanteric or femoral neck fracture, between diabetic and non-diabetic patients. Neither was there significant difference in the length of hospital stay between the diabetic group (12.2 ± 12.4 days) and the non-diabetic group (12.0 ± 13.7 days) ($p=0.7380$).

The percentage of diabetic patients with hip fracture was 22.0% in our study, much higher than the incidence of diabetes in the general population. The prevalence of diabetes in people over the age of 40 years in Taipei City is 8.2% [1]. According to Becker et al., the prevalence of diabetes mellitus in patients admitted for osteoporotic fracture is 14% for white, 41% for black and 50% for Hispanic ethnic minorities [2]. An increased risk of hip fracture in diabetic patients in Taiwan was reported by Chen et al. [3]. The incidence of hip fractures in Taiwan was 2.4/100,000 with a gender ratio of female: male of 2:1 [4]. The rate of non-transport accidents is higher in the diabetic group, probably due to the higher risk of falls in older women with diabetes [5]. More diabetic patients underwent partial hip replacement. Most

orthopedic surgeons recommend arthroplasty in elderly patients suffering from displaced intracapsular fractures because it is associated with fewer revision operations [6]. Surprisingly, the length of hospital stay was similar for both groups. In Taiwan, the National Health Insurance Diagnosis Related Group system works to prevent unnecessary claims, likely causing physicians to minimize patients' length of hospital stay. In a nationwide study, the length of hospital stay of hip fracture in Taiwan was found to be shorter in the year 2000 (11.3 ± 0.1 days) than that of year 1996 (15.6 ± 0.1 days) [7]. According to the above study, the shortened length of hospital stay seemed to be the result of the implementation of a new reimbursement policy which demanded fewer hospitalization days.

Our study was limited by the design of a single center, by its retrospective nature and possible selection bias. However, we still think it is worthwhile to share our experience because we have an adequate number of patients collected over a long period of 18 years. Our study compared the types of hip fracture, the methods of operation and the length of hospital stay between diabetic and non-diabetic patients. Such comparisons were not reported previously.

From the above data we concluded that diabetic patients have an increased

incidence of hip fractures. Elderly diabetic females have a high risk of hip fracture due to non-transport accidents. A higher percentage of diabetic patients underwent partial hip replacement than non-diabetic patients. Restrictions of the National Health Insurance System in Taiwan may influence patients' length of hospital stay.

References

1. Tseng CH, Chong CK, Heng LT, et al: The incidence of type 2 diabetes mellitus in Taiwan. *Diabetes Res Clin Pract* 2000;50 Suppl 2:S61-4.
2. Becker C, Crow S, Toman J, et al: Characteristics of elderly patients admitted to an urban tertiary care hospital with osteoporotic fractures: correlations with risk factors, fracture type, gender and ethnicity. *Osteoporos Int* 2006;17:410-6.
3. Chen HF, Ho CA, Li CY: Increased risks of hip fracture in diabetic patients of Taiwan: a population-based study. *Diabetes Care* 2008;31:75-80.
4. Liou MJ, Tsai JS, Lin JD: Hip fractures: an increasing geriatric problem in Taiwan. *Age Ageing* 2002; 31:483-5.
5. Schwartz AV, Hillier TA, Sellmeyer DE, et al: Older women with diabetes have a higher risk of falls: a prospective study. *Diabetes Care* 2002;25:1749-54.
6. Parker MJ, Khan RJ, Crawford J, et al: Hemiarthroplasty versus internal fixation for displaced intracapsular hip fractures in the elderly. A randomised trial of 455 patients. *J Bone Joint Surg Br* 2002;84:1150-5.
7. Chie WC, Yang RS, Liu JP, et al: High incidence rate of hip fracture in Taiwan: estimated from a nationwide health insurance database. *Osteoporos Int* 2004;15:998-1002

比較糖尿病與非糖尿病患的髖關節骨折---- 台灣一醫學中心 1991 至 2007 年的數據分析

李少白¹ 施婷婷² 陳華芬²

摘要

本報告分析自1991年1月1日至2007年12月31日因髖關節骨折於亞東紀念醫院住院的病患。在上述期間因髖關節骨折住院的患者共4320位，其中949位患有糖尿病。患有糖尿病組的平均年齡為 72.62 ± 10.38 歲，較非糖尿病組的平均年齡 67.46 ± 25.49 歲 ($p < 0.0001$) 年長。糖尿病組的女性病患佔67.65%，比非糖尿病組的49.87%多 ($p < 0.0001$)。糖尿病組因非車禍引起的髖關節骨折為90.52%比非糖尿病組的77.16%多 ($p < 0.0001$)。髖關節骨折的患者所接受的手術可分為股骨內固定復位術及部份髖關節置換術兩種。糖尿病患接受部份髖關節置換術者較多，佔31.31%；而非糖尿病組則較少，佔25.25% ($p = 0.0008$)。骨折的種類可分為股骨間骨折及股骨頸骨折兩大類。這兩組病患罹患骨折的種類並沒有差別 ($p = 0.313$)。這兩組病患的住院天數差別也沒有統計上的意義。糖尿病組的住院天數平均是 12.17 ± 12.38 天，非糖尿病組的住院天數平均是 12.02 ± 13.72 天 ($p = 0.7380$)。總結而言，糖尿病患罹患髖關節骨折的機率高而以女性較多。糖尿病患也較常發生非車禍導致的骨折。雖然較多的糖尿病患接受部份髖關節置換術，但他們的住院天數並沒有比非糖尿病患長。台灣的健保制度可能是影響住院天數的主要原因之一。

(台灣老年醫學暨老年學雜誌 2008；3(4)：●-●)

關鍵詞：糖尿病；髖關節骨折

¹ 亞洲大學健康暨醫務管理學系副教授、² 署立醫院中醫聯盟

通訊作者：徐慧娟

通訊處：413 台中縣霧峰鄉柳豐路 500 號

Email: gingerhsu@seed.net.tw