

行政院國家科學委員會專題研究計畫 成果報告

社區停經初期婦女骨質流失及危險因子之追蹤研究(第三 年)

計畫類別：個別型計畫

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中英文摘要

關鍵詞:骨密度、停經、世代追蹤研究、危險因子

骨質疏鬆症是廿一世紀人類因人口老化所將面臨的重大問題，尤其是婦女在停經後快速的骨質流失更是造成低骨密度，乃至骨質疏鬆、骨折的主要因素。據統計在美國一年有 150 萬例因骨質疏鬆導致的骨折，台灣在進入本世紀不久將會與歐美國家一樣走上人口高度老化的程度。

台灣地區目前雖已有學者提出的骨密度平均值表及標準差，但皆為橫斷面的研究，且皆沒有深入探討其相關的危險或保護因子。為探討相關危險及保護因子，並補正橫斷面研究可能的缺失，本研究計畫乃是以社區為範圍，為期三年的世代追蹤研究。以下報告研究進行的方式與成果。我們以台北市大安區及文山區為主，收錄已停經的婦女，予以測量及調查其基本資料（年齡、身高、體重、腰臀比...等）及生活型態（有無抽煙、喝酒、日常運動量多寡...等），並詳細詢問其月經生育史（初經及停經年齡、懷孕及生產次數、有無哺餵母乳...等）及相關疾病家族史。每位受檢婦女皆接受 DEXA（Dual Energy X-ray Absorptiometry）測量腰椎及左大腿股骨頭關節的骨質密度（BMD - bone mineral density）。每位受測婦女原則上於二年後，再接受一次骨密度檢查的追蹤。

收案時共完成 395 位 65 歲以上停經後婦女的骨密度及其相關資料之調查。由於原先研究設計尚稱周詳，故第一年剛開始研究之進行尚無碰到重大困難。唯一的問題是因 2003 年上半年 SARS 的肆虐，被抽中測量的社區民眾不敢到醫療院所，導致收案個數較原先計劃者為少。到 2005 年 7 月截止，共有 303 位婦女完成追蹤檢查，其中有 60 位於追蹤期間有服用過雙磷酸鹽、女性賀爾蒙、抑鈣素等會影響骨密度的藥物。茲將所得資料分析列表於後。

Keywords: bone mineral density (BMD), menopause, cohort study, risk factor

Osteoporosis is a major public health concern of the 21st century due to the rapidly increasing elderly population worldwide. Women especially will lose bone rapidly after the menopause, which can lead to osteopenia initially, with worsening to osteoporosis and an increased propensity to fracture. Statistics from the USA show approximately 1.5 million fractures occurring each year as a consequence of osteoporosis. The steep increase in the elderly population of Taiwan in recent decades, similar to Western developed nations, will further emphasize the urgency of preventative strategy against osteoporosis.

Although there have been studies on the bone mineral density (BMD) of Taiwanese women, these studies, however, were mainly cross-sectional in nature. In order to investigate reproductive and lifestyle risk factors or protective factors for bone loss in the postmenopausal years and avoid the shortcomings of a cross-sectional study design,

this longitudinal community-based cohort study with a 2-year follow-up were carried out. We include 395 postmenopausal women who are older than 65 years as study subjects.

Using a questionnaire, baseline characteristics (age, years of education, etc.), lifestyle characteristics (ever smoked, drink alcohol, physical activity level, etc.), reproductive history (age at menarche and menopause, parity and number of livebirths, breastfeeding, etc.), as well as pertinent medical and family history were recorded. Anthropometric measurements were taken of each subject (height, weight, BMI, waist-hip ratio (WHR), etc.). Every subject received dual energy X-ray absorptiometry (DEXA) measurements of BMD (bone mineral density) for the lumbar spine and left hip. Up to now, totally 303 patients finished the follow-up examination. Sixty of them took antiresorptive drug during follow-up period.

The data collected initially were used as baseline to compare with any weight, height, lifestyle and BMD changes 2 years later. The final data analyzed were listed as tables in the following. The only problem we encountered during the first and second year study is SARS episode, which hindered subjects from receiving DEXA exam at hospital. Hence the subject number enrolled is less than originally planned.

報告內容

Osteoporosis is a common disorder in Taiwan in recent decades given the steep increases in the elderly population. Several investigators have reported the distribution of bone mass in the Taiwanese population and have found that postmenopausal osteoporosis is also a common disorder in the Chinese population in Taiwan, similar to Western developed nations. Several risk factors have been identified for osteoporosis, with bone mineral density (BMD) as the most useful indicator for stratifying people regarding the level of fracture risk. The most consistent predictors of low bone mass include female sex, increased age, estrogen deficiency, low weight and body mass index (BMI), family history of osteoporosis, smoking, and history of prior fracture. Use of alcohol and caffeine-containing beverages is inconsistently associated with decreased bone mass. In contrast, some measures of physical function and activity have been associated with increased bone mass. Late menarche, early menopause, and low endogenous estrogen levels are also associated with low BMD in several studies.

Racial and ethnic differences persist in terms of the risk of osteoporosis and fractures, as well as in the management of osteoporosis. Unfortunately, the overwhelming majority of the research regarding risk factors for BMD is on the Caucasian race, and there have been few reports based on the Chinese population in Taiwan. A few studies have examined the association of reproductive factors with BMD in postmenopausal women when bone loss is the most rapid, but there have been no such study in our population and these previous studies were mostly cross-sectional in nature. In order to investigate risk factors or protective factors for bone loss in the postmenopausal years, this longitudinal community-based cohort study with a 2-year follow-up was carried out. Using a questionnaire, we recorded baseline characteristics (age, years of education, etc.), lifestyle characteristics (ever smoked, drink alcohol, physical activity level, etc.), reproductive history (age at menarche and menopause, parity and number of livebirths, breastfeeding, use of estrogen replacement therapy, etc.), as well as pertinent medical and family history. Anthropometric measurements were taken of each subject (height, weight, BMI, waist-hip ratio (WHR) etc.). Every subject also received dual energy X-ray absorptiometry (DEXA) measurements of the lumbar spine and left hip.

The data collected initially were used as baseline to compare with any weight, height, lifestyle and BMD changes 2 years later. The final data analyzed were listed as tables in the following. The only problem we encounter during the first and second year study is SARS episode, which hindered subjects from receiving DEXA exam at hospital. Hence the subject number enrolled is less than originally planned.

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Table 1. Mean value of anthropometric factor and BMD change of participant (those with drug intervention were excluded) (n = 243)

	mean	S.D.
Age	73.4	4.9
BMI	24.4	3.1
Change of spine BMD% per year	-0.47	3.64
Change of left femoral neck BMD% per year	-0.50	3.23
Years of menstruation	34.9	4.9
Child Number	3.5	1.7

Table 2. Comparison of change of spine and left femoral neck BMD% per year among some diet and reproductive factors

	Change of spine BMD% per year		Change of left femoral neck BMD% per year
	N	mean	mean
Age			
< 70	108	-0.58	-0.61
≥ 70	195	0.02	-0.25
BMI			
< 24	145	-0.57	-0.28
≥ 24	158	0.15	-0.47
Breast feeding			
no	53	-0.34	-0.35
yes	190	-0.15	-0.39
Child No.			
≤ 3	163	-0.6	-0.36
≥ 4	140	0.28	-0.40
Taking ca tablet			
no	128	-0.38	-0.83
yes	115	-0.02	0.04
Milk			
no	58	-0.12	-0.77
yes	185	-0.91	-0.17

計劃成果自評

1、已完成的工作項目。

- (1).社區停經後婦女腰骨及髖骨密度的世代追蹤基準點資料的收集。
- (2).社區停經後婦女有關骨密度流失的危險因子或保護因子資料之收集。
- (3).社區停經後婦女有關骨密度流失速度的初步定量分析。

2、參與工作的人員獲得之訓練。

- (1).熟悉並實地從事社區研究工作。
- (2).增進對世代追蹤研究方法的實務經驗。
- (3).進一步瞭解骨質疏鬆症的偵測診斷及防治方法。

3、美中不足的是；在這第一年研究的後半年(即2003年的上半年)由於 SARS 的肆虐，導致一些被抽中的受試者不願到醫院接受骨質密度檢查，以致收錄數目不如原先的預期。

可供推廣之研發成果資料表

(無)