Fall and Falling Fractures in the Elderly Men

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Falling fracture was a common problems in elderly. This presentation aimed to identify the factors of fall and falling fracture, especially in the elderly men. The retrospective case-control study was designed. Populations from the participants of falling fracture prevention programs in Lamphun province by the year 2012 were selected. Samples were all 65 years old and above men who experienced fall within 1 year. Factors included age, body mass index, underlying diseases, chronic drugs used, history of parent fracture, steroid used, visual aquity and time up and go test were studied. Multivariate regression analysis was used. 463 cases of fall and 101 cases of falling fracture were found. Significant factors of fall in the elderly men included age, underlying diseases, history of parent fracture, steroid used, impaired visual aquity and prolong time up and go test. Significant factors of fall with fractures was only history of parent fracture. Falling fracture in the elderly men were not be influenced by intrinsic factors.

Keywords: *Fall, Falling fracture, Elderly*

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Introduction

Fall was a common problem in elderly that could be caused serious condition as fracture. Falling fracture was one of the health problems in elderly and more common in women. Falling fractures such as vertebral fracture, hip fracture and distal radius fracture were closely related to osteoporosis[1]. After fractures, the quality of life were markedly impaired. Mortality in first year after hip fracture was up to 18%[2]. Intrinsic factors related fall included aging, history of fall in past 1 year, underlying diseases caused syncope, drugs involved consciousness, visual impairment, muscle strength and balance[3]. Factors related osteoporosis included aging, gender, body mass index(BMI), history of parent fracture, age of menopause, steroid used, underlying diseases caused osteopenia and drugs involved calcium metabolism[4]. According to these factors, Falling fracture was influenced by age, female gender, age of menopause and visual impairment[5]. In the elderly men, falling fractures were also decreased quality of life but the factors might be different. This presentation aimed to identify the factors of fall and falling fracture in the elderly men.

Materials and Methods

The retrospective case-control study was designed. Falling fracture prevention programs were applied for 65 years and above in Lamphun province by the year 2012. Samples were all men who experienced fall within 1 year. Factors included age, body mass index, underlying diseases (hypertension, rheumatoid arthritis, chronic liver or renal diseases), chronic drugs used (hypotensive drugs, hypnotic or anti-depressive drugs, diuretics, anticonvulsants), history of parent fracture and steroid used were recorded. Visual aquity by finger count at 6 meters and time up and go test (TUGT) were tested. Visual aquity at 6 metres was recommended for screening visual impairment and TUGT was effective for evaluation muscle strength and balance[6]. For statistical analysis, multivariate logistic regression was used. All data analysis were conducted using STATA 12 (demonstrated version). The *P*-value < 0.05 was considered significant.

Results

4,780 surveys of the elderly men were included. 463 cases of fall and 101 cases of falling fracture were identified. Factors influenced fall in the elderly men were age, underlying, chronic drugs used, history of parent fracture, steroid, visual impairment and positive time up and go test (table 1). Analysis by multivariate logistic regression was found that chronic drugs used and body mass index was not the significant factors (table 2). According to falling fracture in the elderly men, the only significant factor was history of parent fracture (table 3). The regression analysis was confirmed this finding (table 4).

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Table 1 Factors influenced fall in the elderly men

	No fall (4317)	**Fall (463)**	***P*-value**
Age	73.8 ± 6.2	75.5 ± 6.7	0.000
BMI	20.9 ± 3.5	20.9 ± 3.3	0.555
Underlying diseases	1300 (30.3%)	198 (42.9%)	0.000
Chronic drugs used	1294 (30.2%)	197 (42.6%)	0.000
Parent Fractures	85 (1.9%)	27 (5.8%)	0.000
Steroid used	62 (1.4%)	20 (4.3%)	0.000
Visual aquity	923 (21.6%)	167 (36.1%)	0.000
TUGT	14.2 + 7	17.9 + 10.8	0.000

Table 2 Significant factors of fall in the elderly men

	Odd ratio	**95% CI**	***P*-value**
Age	1.02	1.01-1.03	0.000
Underlying diseases	1.39	1.00-1.92	0.045
Chronic drugs used	1.14	0.82-1.58	0.409
Parent Fractures	3.78	2.93-4.88	0.000
Steroid used	2.72	1.93-3.81	0.000
Visual aquity	1.43	1.25-1.64	0.000
TUGT	1.03	1.02-1.03	0.000

Table 3 Factors influenced falling fracture in the elderly men

	Fall (362)	**fallFx (101)**	***P*-value**
Age	75.5 ± 6.7	75.7 ± 6.6	0.417
BMI	20.8 ± 3.3	21.2 ± 3.2	0.139
Underlying diseases	156 (43.2%)	42 (41.6%)	0.770
Chronic drugs used	154 (42.7%)	43 (42.6%)	0.988
Parent Fractures	17 (4.7%)	10 (9.9%)	0.048
Steroid used	14 (3.9%)	6 (5.9%)	0.368
Visual aquity	126 (34.9%)	41 (40.6%)	0.293
TUGT	18.4 ± 11.4	16.4 ± 7.9	0.951
Falling > 1	136 (37.6%)	33 (32.7%)	0.366

Table 4 Significant factors of falling fracture in the elderly men

	Odd ratio	**95% CI**	***P*-value**
Age	1.01	0.99-1.03	0.087
BMI	0.96	0.93-1.00	0.070
Underlying diseases	1.39	0.74-2.60	0.296
Chronic drugs used	0.84	0.45-1.57	0.593
Parent Fractures	1.56	1.01-2.43	0.044
Steroid used	1.46	0.82-2.60	0.189
Visual aquity	1.28	0.97-1.68	0.077
TUGT	0.99	0.98-1.00	0.392
Falling > 1	0.81	0.61-1.06	0.134

Discussion

All of studied factors were intrinsic factors of fall and osteoporosis, not included extrinsic factors of fall. Falling fracture prevention programs made all of the participants willing to be interviewed and test. Visual aquity by finger count and TUGT were simple for the elderly. Falling fracture was one of the bad experience that could be easy recognized.

Prevalence of fall amoung elderly men population in Lamphun was 9.6% similar to National Statistics survey[7]. 21.8% fractures of the fall were occured. Factors of fall in the elderly men in this presentation were similar to other studies[8] such as increased age, diseases and steroids that affected strength, impaired vision and balanced abilities. However, factor of fall with fracture was different. Most falling fractures were influenced by osteoporosis and visual impairment[5] but falling fracture in the elderly men involved only history of parent fracture. This factor was one of the osteoporotic risk but not be intrinsic part. So, the extrinsic factors of falling fracture in elderly men should be considered. Living in the same environment in the families might be an important issue. Accidental falling injuries with environment related were the most frequently cited, accounting for 30-50% in most series[8]. Elderly with high residential stability (more than 1 year of staying) decreased fall injuries[9]. Environment factors such as social cohesion with neighborhoods and physical environmental hazard were related to fall events[10]. Falling fracture in the elderly men might be influenced by environment factors more than intrinsic factors. Men have a worse prognosis following fractures than women[11] and Falls are a marker of underlying disorders[12]. The author suggested that prevention program for elderly men should be different. Nowadays, evidences of the effectiveness of fall prevention programmes in primary care, community, or emergency care settings were limited[13]. Multifactorial fall prevention interventions are effective for individual patients. For community programmes, single interventions might be more acceptable and cost effective and as effective as multifactorial interventions[14].

Conclusion

In elderly men, factors of fall were not different from the previous evidences. For falling fracture, the intrinsic factors were not be the influence factors. So the environment factors should be considered.

Potential conflicts of interest

none

What is already known on this topic

The factors of fall in elderly men were similar to general elderly.

What this study adds

The factors of fall with fracture in elderly men were not similar to general elderly. It was not be depended on intrinsic factors.

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การหกล้มและกระดูกหักจากการหกล้มในผู้ชายสูงอายุ

ชูชาติ ขันตยาภรณ์, พบ

กระดูกหักจากการหกล้มเป็นปัญหาที่พบบ่อยในผู้สูงอายุ การศึกษานี้มุ่งเน้นศึกษาปัจจัยที่มีอิทธิพลต่อการหกล้มและกระดูกหักจากการหกล้มในเพศชายสูงอายุโดยเฉพาะ ออกแบบการศึกษาเป็นการศึกษาย้อนหลังแบบเคสคอนโทรล ประชากรที่ใช้ในการศึกษามาจากผู้ที่เข้าร่วมโครงการป้องกันกระดูกหักจากการหกล้มในผู้สูงอายุในจังหวัดลำพูน ปี 2555 ได้แก่ ผู้ชายอายุตั้งแต่ 65 ปีขึ้นไป ที่เคยมีประสบการณ์หกล้มในหนึ่งปีที่ผ่านมา ปัจจัยที่ใช้ในการศึกษาได้แก่ อายุ ดัชนีมวลกาย โรคประจำตัว ยาที่ใช้ประจำ ประวัติการหกล้มของพ่อแม่ การใช้ยาสเตียรอยด์ ภาวะสายตา และการทดสอบการทรงตัว วิเคราะห์ข้อมูลด้วยสถิติพหุถดถอยโลจิสติกส์ พบว่า ชายสูงอายุที่เคยมีประสบการณ์หกล้มจำนวน 463 ราย ในจำนวนนี้ มีภาวะกระดูกหักด้วย 101 ราย ปัจจัยที่มีอิทธิพลต่อการหกล้มในผู้ชายสูงอายุอย่างมีนัยสำคัญ ได้แก่ อายุ โรคประจำตัว ประวัติการหกล้มในพ่อแม่ การใช้ยาสเตียรอยด์ ภาวะสายตาบกพร่อง และการทดสอบพบการทรงตัวเกินค่าปกติ ส่วนปัจจัยที่มีอิทธิพลต่อกระดูกหักจากการหกล้มในผู้ชายสูงอายุอย่างมีนัยสำคัญมีปัจจัยเดียว คือ ประวัติการหกล้มในพ่อแม่ กระดูกหักจากการหกล้มในผู้ชายสูงอายุจึงไม่เกี่ยวข้องกับปัจจัยภายในตัวผู้ชายสูงอายุเลย