



**Karolinska
Institutet**

Neurobiologi, Vårdvetenskap och Samhälle (NVS)

**Characterization of first ever stroke patients:
Functional status with special reference to risk of falls and fracture.**

AKADEMISK AVHANDLING

som för avläggande av medicine doktorsexamen vid Karolinska
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Introduction

The costs for falling accidents in Sweden are very high. There is now evidence that assessments and intervention programmes are effective in reducing the risk of falling. It is important to identify which patients have a risk of falling and therefore would benefit most from fall prevention measures. Patients with stroke have a high risk of falling. The falls may result in fear of falling again and fractures. Hip fractures constitute one of the most serious ones. Compared with the general population, stroke survivors have an increased risk of hip fracture. The risk is up to four times higher than for age-matched control subjects. The most likely explanations are an increased risk of falling and reduced bone density.

Aims

Our aims in the present study were to determine if certain test instruments can identify fallers and predict hip fractures, determine the relationship between fear of falling and functional characteristics, describe the circumstances that prevailed when the patients sustained their hip fractures, compare bone mineral density in patients with stroke and hip fracture and to investigate side differences in bone mineral density in patients with stroke alone.

Methods

Patients with first ever stroke treated in the stroke unit at Örebro University Hospital during one year were included in the present study. One hundred and sixty-two of the 218 patients who were included participated in the follow-up after six or twelve months. Nine of the patients fractured their hip within two years after stroke. Bone mineral density was measured in eight of them, as well as in 76 control subjects.

Results

The results of Berg Balance Scale (BBS), Stops Walking When Talking (SWWT) and Timed Up & Go (TUG) differed between fallers and non-fallers. Previous falls as well as using sedatives and impaired vision was associated with falling. Impaired physical function was significantly associated with scoring low fall-related self-efficacy, both for fallers and non-fallers. All patients who subsequently sustained hip fracture had their fractures indoors when they were performing everyday activities. Hip fracture was associated with previous fractures, impaired vision and impaired cognition. Bone mineral density in patients with hip fracture tended to be lower whether they had a stroke or not. Side differences may occur even in patients who can walk independently at stroke onset and all patients who fractured their hip did not have osteoporosis.

Conclusions

BBS, SWWT, TUG and Falls Efficacy Scale - Swedish version could add useful information in a multidisciplinary fall risk analysis. The same factors were associated with an increased risk of falling and having a hip fracture in patients with stroke as for people in general. For a frail, elderly person who already has very small margins, the onset of stroke may mean the difference between falling or not falling, having a hip fracture or not.

Keywords: stroke, falls, hip fracture, bone density, fear of falling, self-efficacy, fall risk prevention, Berg Balance Scale, Stops Walking When Talking and Timed Up & Go.