ORIGINAL ARTICLE

Locomotive Syndrome Associated With Risk For Fall And Fracture In Elderly Population

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ABSTRACT

Locomotive syndrome is recognized as a condition of people having musculoskeletal disease with physical disability. It is a condition of reduced movements due to impaired locomotive organs. The risk of fall and fracture is present in locomotive syndrome.

Purpose: To determine the prevalence of locomotive syndrome associated with risk for fall and fracture in elderly population.

Study Design: Cross sectional study

Methodology: Participants (n=196) selected in present study. GLFS-25 scale was used to assess the locomotive syndrome and FRAT scale was used to assess the risk for fall and fracture. The duration of study was 6 months following ethical committee approval.

Statistical analysis: Physical therapy the effects of both treatment interventions were analyzed through SPSS 21 version.

Results: Both male and female were included. Males were 96 (49%) whereas females were 100 (51%). The age of enrolled patients presented as mean±SD was 69.9 ± 5.7 years. Results showed that 99 (50.5%) were having locomotive syndrome in which 55 (55.6%) were females and 44 (44.4%) were males while 52% were having medium risk of fall and fracture, 33.2% were having high risk and 14.8% were having low risk.

Conclusion: It was concluded that prevalence of locomotive syndrome was high in elderly population. It depends upon age, gender and musculoskeletal conditions. Its prevalence was slightly higher in women than men. Hence, comprehensive care should be taken like medications, vitamin D supplements, and exercise inorder to improve or prevent LS.

Key words: Locomotive syndrome, fall, and fracture, GLFS-25, FRAT.

INTRODUCTION

Locomotive syndrome is due to reduced mobility and associated with impairment of locomotive organs. The rationale is that there is strong association between Locomotive syndrome in elderly population and I want to study this case because this study has not done before in Pakistan. The locomotive system has joints, bones, muscles and peripheral nerves which contribute in activity of daily living in old age.[1] To prevent falls in elderly people maintaining physical activity level is required. The decrease in the locomotive function and the decrease life space cause the change in physical function with increases falling risk. Visual and hearing loss also causes increase in risk for fall and fracture with locomotive disorder. Healthy locomotive organs are important to prevent from fall and fracture.[2] Locomotive function in elderly people is important to maintain quality of life. Those who experienced fall have strong fear of falling and walking. The fear of falling along with disability and decrease quality of life.[3]

Common problem facing in older people falls in an aged society, with 30% of those who are aged and over 65 years have experienced of falls at least once annually (Tinetti and Williams, 1997). In aged adults upto 90% of bone fractures are caused by falls. Hospitalization, institutionalization, and an increase comorbidities are serious public health problems are caused by falls. Tinetti, Williams, and Mayewski (1986) reported that there is a positive association between the risk of falls and number of disabilities. Fatigue is defined as a feeling of low energy, and in older adults the important symptoms is subjective fatigue. 20% to 50% of older adults in community told complaint of being fatigued. In many studies, restricted activity was associated with fatigue, disability and increase in death rate in older population. The study examined that theseverity of fatigue is independently associated with the incidence of fallsduring 2 year follow up period from older population with locomotive syndrome.[4] Among older population causes of bone fracture are falls which are about 80% to 90%. Older people over the age of 65 years have experience of falls. In older population falls prevention is necessary because it leads to significant health issues. The most common risk of fall is decreased physical performance. Self reported questionnaires, subjective assessments and objective assessments like gait speed measurement, performance based measurements, muscle strength and balance functioning are used to evaluate physical functioning in older adults.[5]

Balance disorder, gait ataxia, decreased mobility associated with low back pain which are risk for falls.[6] Locomotive syndrome and its test methods are performed, various checkups for aging population are performed in Japan like osteoporosis checkups to check the great risk of fracture in people performed about 60% municipalities. Locomotive checkups almost difficults for municipalities. Loco check questionnaire for Locomotive syndrome is simple test for locomotive syndrome.[7] To prevent locomotive syndrome, Nakamura said that people avoid progressively worsen of locomotive organs and to avoid orthopedic issues and increases walking ability.[8]

Objective: To determine the prevalence of locomotive syndrome associated with risk for fall and fracture in elderly population.

Methodology: It is an observational cross-sectional study in which total of 196 patients were recruited fulfilling the inclusion and exclusion criteria through same non-probability convenient sampling. Data was collected through a standardized questionnaire from the different government hospitals of Lahore. Both males and females will be included. Study was conducted under ethical considerations. A Performa with validated GLFS-25 and FRAT questionnaires were distributed among 196 persons who were willing to participate. Informed written consent was taken. The GLFS-25 based on scores. Points less than or equal to 6 indicates no LS while points 7-15 indicates grade 1 of locomotive syndrome and points >16 indicates grade 2 locomotive syndrome. FRAT is also based on scores, points 0-6 indicates low risk of fall, points 12-15 indicates medium risk of fall and points 16-20 indicates high risk of fall.

Statistical analysis: Data was analyzed by SPSS v25. The quantitative variables were presented as mean and standard deviation. Categorical variables were presented as frequencies and percentages.

RESULTS:

Demographic parameters of enrolled subjects like age, gender and prevalence of locomotive syndrome was summarized in table-1 as frequency and percentage.

Table-1: Demographic data and prevalence of locomotive syndrome

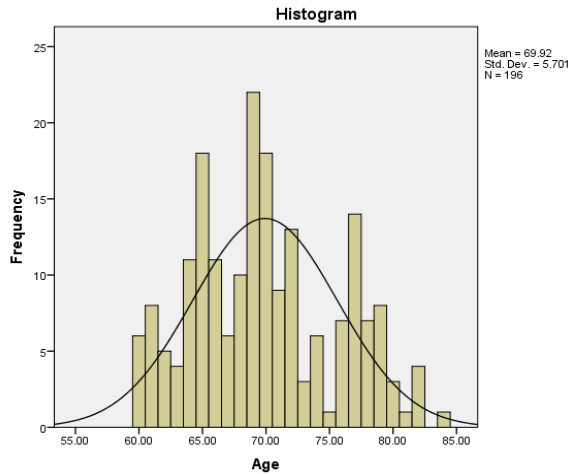| Variables		Frequency	Percentage (%)
Gender	Males	96	49.0%
	Females	100	51.0%
Locomotive Syndrome	Yes	99	50.5%
	No	107	49.5%
Age	(Mean ± SD)	69.9 ± 5.7 years	

Figure-1: Histogram showing age distribution among enrolled subjects

The result showed that 99 subjects were having locomotive syndrome in which 7(3.6%) were having grade 1 whereas 92 (46.9%) were having grade 2 as shown in table-2.

Table 2: Locomotive Syndrome Grading

GENDER	Frequency	Percentage (%)
VALID NORMAL	97	49.5%
LOCOMOTIVE GRADE-1	7	3.6%
LOCOMOTIVE GRADE-2	92	46.9%
TOTAL	196	100

The result showed that 52% people having medium risk, 14.8% were having low risk and 33.2% were having high risk of fall and fracture among subjects as depicted in table-3.

Table-3: FRAT_Total_Categorical

	Frequency	Percent	Cumulative percent
Low risk	29	14.8	14.8
Medium risk	102	52.0	66.8
High risk	65	33.2	100.0
Total	196	100.0	

DISCUSSION

In the present study we aimed to study the prevalence of locomotive syndrome in elderly population with having the risk of fall and fracture. Based on our study we found that out of 196 participants 96 (49%) were males and 100 (51%) were female and 96 (49%) were having locomotive syndrome in which 55 (55.6%) were females and 44 (44.4%) were males while 52% were having medium risk of fall and fracture, 33.2% were having high risk and 14.8% were having low risk. Those who having locomotive syndrome have increased risk of fall and fracture.[9]

In the past study a cross-sectional study was conducted. In which the participants were 747 and the age was from 30 to 90. The study showed that the locomotive syndrome was present in 17.7% in women and 11.2% in men in age of older than 65 years. The prevalence of locomotive syndrome was affected by life style factor.[10] In the past study it was suggested that the prevalence locomotive syndrome was higher in females than male and there were risk factors linked with locomotive syndrome and fracture and falls.[11]

In the past study 830 participants were included. The study was based on relation of fall with locomotive syndrome. The age was greater than 60 years. It was suggested that the falls were associated with locomotive function.[12] In the past a study conducted in Japan. 624 participants were selected in this study and the age was greater than 65 years. They used loco check to assess the locomotive function in older people of Japan. It was investigated that the 157 participants were having history of fall. It shows that the rate of the falls was higher in women than men.[13] In the past study it was investigated that the prevalence of locomotive syndrome in Japan by loco check was higher in females which were about 35% and lower in males which were about 21.2%. It shows that the locomotive syndrome increases as the age of people increases.[14]

Limitation: Our study had several limitations like financial constraints, time restrictions small sample number and fewer resources.

CONCLUSION

It was concluded that prevalence of locomotive syndrome was high in elderly population. It depends upon age, gender and musculoskeletal conditions. Its prevalence was slightly higher in women than men. Hence, comprehensive care should be taken like medications, vitamin D supplements, and exercise inorder to improve or prevent LS. Author's

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