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A simple screening procedure could identify Indian patients with early cognitive impairment and its implications for the management of geriatric hip fracture

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Abstract

Background: Dementia is one of the most common and cognitive impairments growing over the globe. It encompasses a wide range of other neurodegenerative disorders with the symptoms such as loss of memory, inability in carrying out everyday activities, a decline in the brain function activities, and perplexity. However, it has been identified that there is an absolute lack of treatment modalities for dementia, but the early diagnosis plays an important role in identifying the cognitive impairment in the asymptomatic phase itself. It helps in preventing the disease from reaching a further complicated stage.

Aim: To assess the impact of cognitive impairment screening on the management of geriatric hip fractures.

Methods: It was an observational study carried out at the Shree Krishna Hospital, Karamsad for a period of June, 2018 to May, 2020. Two hundred sixty patients were included in the study. The patients were divided into three groups, namely hemiarthroplasty (HA), Total Hip Arthroplasty (THA), hemiarthroplasty in patients with known dementia (HAD).

Result: The study showed male preponderance in the study, and the majority of the patients were above 80 years of age. There was a significant difference in the patients who can perform their grocery or medication independently and not independently with respect to MMSE. However, there was no statistically significant difference in Hip Harris Score. There was a statistically significant difference among the three groups regarding the intraoperative blood, operation duration, hospital stay, ICU postoperative, in-hospital details.

Conclusion: In light of the above literature, it was found that hip fractures and cognitive impairment were closely related. There are many risk factors of hip fracture, which are aggravated due to the late diagnosis of cognitive impairment. The incidence of hip fracture among patients suffering from dementia was much higher as compared to normal patients.

Keywords: Multi-morbidity, cognitive impairment, geriatric hip fracture

Introduction

Dementia is one of the most common and cognitive impairments growing over the globe. It encompasses a wide range of other neurodegenerative disorders with the symptoms such as loss of memory, inability in carrying out everyday activities, a decline in the brain function activities, and perplexity^[1]. However, it has been identified that there is an absolute lack of treatment modalities for dementia, but the early diagnosis plays an important role in identifying the cognitive impairment in the asymptomatic phase itself. It helps in preventing the disease from reaching a further complicated stage^[2].

Dementia and hip fractures are the two most predominantly occurring conditions addressed among the patients with the growing age^[3]. It has been identified that the prevalence rate is increasing with the advancement of age. Starting from 3.0% in the people aged between 65-74 years and going to 18.0% in the patients aged between 75-85 years of age^[4]. Also, it has been observed that this incidence rate is as high as 48% among the older patients aged above 85 years^[5]. Similarly, it has been witnessed that the incidence of hip fractures among patients aged above 65 years is nearly 60%. It has also been witnessed that the rate of mortality among hip fracture patients is relevantly high as compared to any other ailment^[6].

Furthermore, it has been observed that the patients suffering from cognitive impairment are at a higher risk of hip fractures as compared to those who are cognitively sound [7]. As dementia mainly occurs from Alzheimer disease, Parkinson

Disease, and vascular disease that result in visual hallucination, disturbed consciousness levels, and frequent falls. These all factors contribute a great deal to the increased intensity of hip fractures [8].

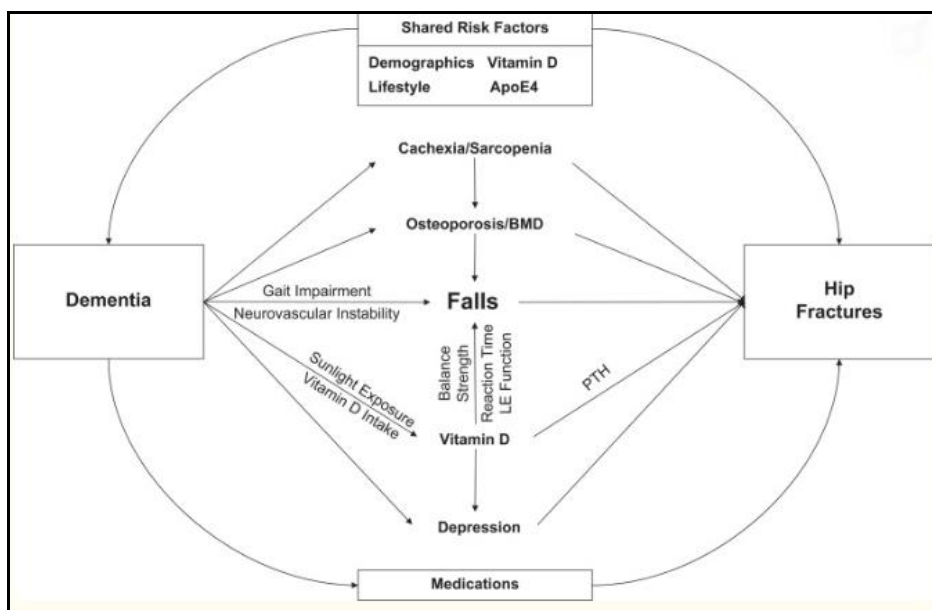


Fig 1: Pathogenic framework for dementia and hip fracture [7].

The lack of exposure to the psychological tests and the lack of early recognition has resulted in increased hospital stay among patients with cognitive impairment undergoing hip fracture treatment [9].

Aim

To assess the impact of cognitive impairment screening on the management of geriatric hip fractures.

Material and Methods

It was an observational study carried out at the Shree Krishna Hospital, Karamsad for a period of June, 2018 to May, 2020. Two hundred sixty patients were included in the study. The patients were divided into three groups, namely hemiarthroplasty (HA), Total Hip Arthroplasty (THA), hemiarthroplasty in patients with known dementia (HAD).

Results

Table 1: Summary of Patient Characteristics Included in the Clinical Analysis

Patient characteristics	THA	HA	HAd
BMI	26	26	22
Age	82	84	90
Gender			
Male	20	20	12
Female	80	78	50
ASA score average	2	3	4
1	-	-	-
2	59	21	7
3	37	67	47
4	3	10	9
Follow-up	45	8	4

The above table showed the patient characteristics. The study showed male preponderance in the study, and the majority of the patients were above 80 years of age.

Table 2: Ambulatory Status and Neuropsychological Assessment of Patients Separated to a Group Based on Their Inability to Perform Their Grocery Shopping and/or Prepare Their Medications Independently

Subtest	Not Independent	Independent	P-value
MMSE	-2.7	-0.5	<0.05
Harris Hip Score	76	84	>0.05

The above table showed that there was a significant difference in the patients who can perform their grocery or medication independently and not independently with respect to MMSE. However, there was no statistically significant difference in Hip Harris Score.

Table 3: Peri-operative Parameters

Peri-operative parameters	THA	HA	HAd	p-value
Intraoperative blood loss (ml)	392	239	199	<0.05
Operation duration (min)	100	82	89	<0.05
Hospital stay (d)	7	9	8	>0.05
ICU postoperative (n)	4	13	10	<0.05
Inhospital deaths (n)	3	5	12	<0.05

The above table showed that there was a statistically significant difference among the three groups regarding the intraoperative blood, operation duration, hospital stay, ICU postoperative, in-hospital details.

It was also found in the current study that patients with dementia and on treatment were more prone to falls that resulted in increased chances of hip fractures. Cholinesterase inhibitors are often prescribed for Alzheimer disease, which results in increasing the scope of syncope that, in turn, results in fall and hip fractures. The risk factors of hip fracture included neurovascular instability, falls, vitamin D deficiency, osteoporosis, decreased bone density, and depression. These are all the factors generated by cognitive impairment as well. Therefore, early diagnosis might also improve the management scheme as they reduce the risk of hip fractures and also reduces postoperative complications as well.

Discussion

It was identified in the current study that there was no statistically significant difference among the different groups regarding the age group. Similar results were found in the study of Schaller *et al.* (2012) ^[10]. In the current study, it was found that there was no significant difference among the different groups regarding the mortality. Similarly, according to the study of Baker *et al.* (2006) ^[11], there was no statistically significant difference between the two groups. In the current study, it was found that the postoperative complications were low as the rate of dislocation was quite low. It was showed that the in geriatric hip fractures THA is the apstest treatment mechanism, but it showed a higher rate of dislocation as compared to the patients treated with HA. On the contrary, Liao *et al.* (2012) ^[12] found higher rates of dislocation and complication postoperatively. In the current study, it was found that cognitive impairment was closely related to hip fractures. Similar results were obtained in the study of Gill *et al.*, (2009) ^[13].

Conclusion

In light of the above literature, it was found that hip fractures and cognitive impairment were closely related. There are manyrisk factors of hip fracture, which are aggravated due to the late diagnosis of cognitive impairment. The incidence of hip fracture among patients suffering from dementia was much higher as compared to normal patients.

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