Prevalence of Complications Associated with Alzheimer Disease Patients in Aseer Region, Saudi Arabia

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Abstract

Background: Alzheimer's Disease (AD) is neurodegenerative disorder that develops over a period of years that differs from normal aging. One of the most important risk factors is increasing age, and the majority of people with Alzheimer's are 65 years and older. AD reduces life expectancy and is one of the major causes of physical disability, institutionalization, and low quality of life among the elderly. AD is highly related to functional disability and institutionalization. There are many factors associated with AD including physical and behavioral complications. **Aim:** To assess epidemiological pattern and complications of AD among patients in Aseer region, Saudi Arabia. **Methodology:** A descriptive cross-sectional study included 110 Alzheimer patients (66 males and 44 females) registered at Aseer Central Hospital, Southern of Saudi Arabia. A pre-structured questionnaire was used for data collection that included patients' personal characteristics and frequency of exposure to complications associated with Alzheimer disease. **Results:** About 72% of the patients aged 70 years or older and 60% were males. Almost all of the patients were citizens 97.3% and 62.7% were married. Exact of 56.4% of the patients were illiterate and only few 4.5% were university graduated. Pneumonia was the most frequent complication followed by getting lost, fall down, and bone fracture. Getting lost was significantly more among males than females (P=0.007), while pneumonia was significantly more among patients treated in governmental hospitals (P=0.003). On the other hand, bone fractures and falling down did not differ significantly according to patients' personal characteristics. **Conclusions:** The most frequent complications associated with Alzheimer Disease in our study population were pneumonia, getting lost, falling down and bone fractures. Risk factors associated with these complications include male gender for getting lost. Health care providers are advised to provide close care to Alzheimer disease patients.

Keywords: Alzheimer's disease; Care givers; Complications; Epidemiology; Patient characteristics; Disease burden

Introduction

Alzheimer's Disease (AD) is a type of dementia that causes decline in cognitive function and subsequently behavioral changes. [1] Symptoms usually develop slowly and progress over time; yet severe enough to interfere with daily tasks which differentiate it from Normal aging. Alzheimer's is the most common type of dementia, accounts for 60% to 80% of dementia cases. [2,3] One of the most important risk factors is increasing age, and the majority of people with Alzheimer's are 65 years and older. [4] Nearly 200,000 Americans under the age of 65 have younger-onset Alzheimer's disease (also known as early-onset Alzheimer's). [5] Memory loss, in particular recent and short term memory, is the first sign which is mild, but as disease progress decline in other cognitive functions, communication, visuospatial orientation and ambulation [6] Alzheimer's is the sixth leading cause of death in the United States. On average, a person with Alzheimer's lives four to eight years after diagnosis, but can be as long as 20 years, depending on other factors. [7]

Regarding disease burden at the individual level, AD reduces life expectancy and is one of the major causes of physical disability, institutionalization, and low quality of life among the elderly. [8] AD is highly related to functional disability and institutionalization. It is reported that among individuals over 60 years of age dementia contributes 11.2% of the years lived with disability, compared with 9.5% for stroke, 8.9% for musculoskeletal disorders, and 5.0% for cardiovascular disease. [9]

Alzheimer's has no curative therapy, but therapeutic interventions can be considered to temporarily delay the progress of dementia symptoms and improve quality of life for those with Alzheimer's and their caregivers. [10-12]

Methodology

A descriptive cross-sectional approach including 110 patients with Alzheimer's disease at Aseer Central Hospital during the period from January to July 2017 was conducted. Data were collected directly from the patient's and care givers using pre-structured questionnaire. Questionnaire was developed by the authors with the help of literature and experts consultation. Data collected included patients demographic data such as age, gender, education level, marital status, and relation of the caregiver with the patient. Data regarding disease were also extracted including disease duration, hospitalizations, and disease complications. Medical care setting (private or governmental) besides patients' satisfaction regarding the provided care were also covered in the study questionnaire.

Data Analysis

After data were extracted, it was revised, coded and fed to statistical software IBM SPSS version 22 (SPSS, Inc. Chicago, IL). All statistical analysis was done using two tailed test. P value less than 0.05 was considered to be statistically significant. Descriptive analysis based on frequency and percent distribution was done for all variables including patients' demographic data, medical care data, and disease complications. Univariant relations between patients' bio-demographic data and disease complications were assessed using exact probability testdue to low expected frequencies in the cross tabulations.

Results

A sample of 110 casesof AD was included in the study. About 72% of the patients aged 70 years or older and 60% were males. Almost all patients were Saudis, and 62.7% of them were married. As for educational level, 56.4% of the patients were illiterate and only 4.5% were university graduated. More than 50% of the cases had the disease for less than two years and 33.6% were diseased for 3-5 years. Regarding hospital admission, 30% of the patients were not admitted to any hospital during the last year while 50% were admitted 1-4 times. About 69% of the patients' caregivers were their siblings and only 11.8% were spouse [Table 1].

Considering patients medical care [Table 2], 73.6% of the patients had their medical care in governmental hospitals in Aseer region while 38.2% needed to receive their health services outside the Aseer region. As for patients' satisfaction regarding the provided health care, 53.6% of the patients were unsatisfied while 18.2% were satisfied regarding the health care they received.

Regarding the complications associated with AD among the patients (Figure 1), pneumonia was the most frequent complication (60.9%) followed by getting lost (60.9%), fall down (50.9%), and bone fracture (18.2%).

Table 3 demonstrates the relation the complications with the patients' characteristics. Pneumonia was recorded among 62.6% of the Saudi cases compared to none of the non Saudis with recorded statistical significance (P=0.028). Also 69.1% of the patients who received their medical care in the governmental hospitals had pneumonia compared to 37.9% of

Table 1. Bio-demographic data of AD patients in Aseer region, Saudi Arabia.

Bio-demographic data		No	%
Age in years	< 70 years	31	28.20%
	70-89	55	50.00%
	90+	24	21.80%
Gender	Male	66	60.00%
	Female	44	40.00%
Marital status	Married	69	62.70%
	Not married	41	37.30%
Nationality	Saudi	107	97.30%
	Non Saudi	3	2.70%
Educational level	Illiterate	62	56.40%
	Primary	23	20.90%
	Intermediate	13	11.80%
	Secondary	7	6.40%
	University/ more	5	4.50%
Duration of the disease	< 2 years	57	51.80%
	03-May	37	33.60%
	> 5 years	16	14.50%
Hospital admissions last year	None	33	30.00%
	01-Apr	55	50.00%
	5+	22	20.00%
Relation to the caregiver	Partner	13	11.80%
	Son/ daughter	76	69.10%
	Brother/ sister	3	2.70%
	Father/ mother	7	6.40%
	Others	11	10.00%

Table 2. Medical care data for patients with AD in Aseer region, Saudi Arabia.

Patient medical care		No	%
Type of treating hospital	Governmental	81	73.60%
	Private	29	26.40%
The patient has visits to health services outside the Aseer region?	Yes	42	38.20%
	No	68	61.80%
How satisfied are the patient about the provided health services	Very unsatisfied	35	31.80%
	Unsatisfied	24	21.80%
	Average	31	28.20%
	Satisfied	6	5.50%
	Very satisfied	14	12.70%
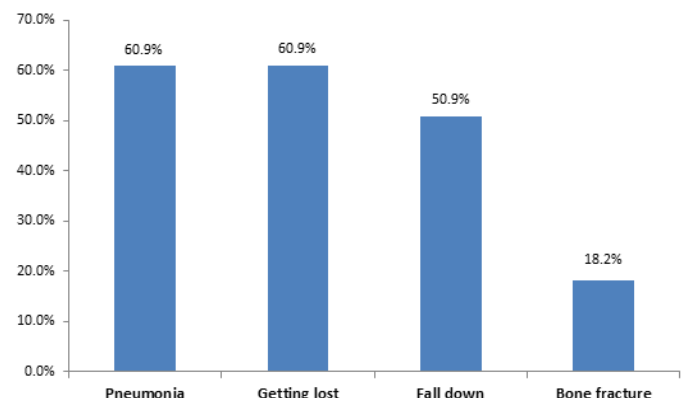
Figure 1: AD consequences among patients in Aseer region, Saudi Arabia.

those who received the care in private hospitals (P=0.003). As for satisfaction relation with pneumonia, it was recorded among 72.9% of the unsatisfied cases compared to 29% of patients with neutral attitude regarding the health care (P=0.001). As for bone fracture correlates, it was recorded among 66.7% of the non Saudi patients compared to 16.8% of Saudis with recorded statistical significance (P=0.027). None of the other patients' characteristics were significantly related with fractures. Considering fall down, it was reported for 52.3% of the Saudi patients compared to none of the others (P=0.074). Also fall down was recorded for 58.1% of the illiterate patients compared to 41.7% of educated group (P=0.088). With consideration to getting lost, it was reported among 71.2% of the male patients compared to 45.5% of the females (P=0.007). None of the other patients' characteristics were significantly related with getting lost.

Discussion

Alzheimer's Disease (AD) is a degenerative disease, which is characterized by being worse with time. Alzheimer's disease may begin 20 years or more before being symptomatic, [13-15] with small changes in the brain which usually patient unaware. Only after years of brain changes do individuals experience noticeable symptoms, such as memory loss and language problems. Symptoms occur because nerve cells (neurons) in parts of the brain involved in thinking, learning and memory (cognitive function) have been damaged or destroyed. [16] Over time, symptoms progress and affect individuals' ability to perform everyday activities. At this point, the individual is said to have dementia due to Alzheimer's disease, or Alzheimer's dementia. [17,18]

The current study aimed to assess the epidemiology and consequences in AD among patients in Aseer region, Saudi Arabia. The study revealed that more than two thirds of the patients aged 70 years or more. Also about two thirds were males and married. Regarding disease duration of the included patients, the current study revealed that more than half of the cases had the disease for less than two years and nearly half of these patients were admitted to hospital one to four times during the last year. As for care giver, more than two thirds were patients siblings and only very few % (11%) were spouse. Alzheimer's Association in 2011 reported that over 5.4 million people in the United States have AD, including 5.2 million people aging 65 years or older. With the advanced ages, it is estimated that this number will increase by 50% with over 7.7 million people in that age range affected by ADby the year 2030, and will almost triple of 11 to 16 million by the year 2050. [19] Other studies revealed that themost significant risk factors for late-onset Alzheimer's are older age, carrying the e4 form of the APOE geneand having a family history of Alzheimer's. The vast majority of people with Alzheimer's dementia at age of 65 or older. Also other researchers confirmed that most affected patients were males. [20-22]

With regard to complications recorded among AD patients, the current study revealed that pneumonia was the most frequent complication which was recorded among nearly two thirds of the cases followed with getting loss and failing down but the least recorded was having bone fractures. Recurrent pneumonia explains the high admission rate to hospitals during the last year

with some cases with fractures. The study also revealed that pneumonia was significantly associated with patient nationality as it was more recorded among Saudi patients because they are the main bulk of the sample. Also pneumonia was significantly more among patients who received the medical care in the governmental hospitals which may be explained by that the medical care of lower quality and some of the governmental hospitals don't have the trained staff to deal with AD cases. Also pneumonia was highly recorded among patient with poor satisfaction regarding the provided medical care (most probably those who were treated at governmental hospitals). Fall down was more recorded among illiterate AD patients who were cared by parents or paid persons. Getting lost was more among male patients who may be allowed to be out door due to gender nature making them more liable for getting lost.

Conclusions

In our study population of representing sample of Alzheimer Disease patients, most frequent complications was development of pneumonia which needed hospitalization followed by getting lost, falling down and bone fractures. Risk factors associated with these complications include male gender for getting lost, lower educational level and frequent hospital admissions for pneumonia. Health care providers are advised to be aware of the disease nature and the physiological and behavioural changes associated with the disease to be aware of all possible health related risks.

Acknowledgment

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