

Forensic medicine evaluation of Alzheimer patients: a series from Ankara, Turkey

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Received: 15.03.2014 • Accepted/Published Online: 08.06.2014 • Printed: 30.10.2015

Background/aim: Pathophysiological changes due to Alzheimer disease and increasing age might result in situations requiring forensic evaluation in the elderly. Judicial bodies might need forensic evaluation of trauma and the decision-making capacity of Alzheimer patients. This study aimed to determine the demographic and clinical characteristics of Alzheimer patients seen for forensic evaluation.

Materials and methods: Forensic records issued by the Department of Forensic Medicine of Hacettepe University in 2012 and 2013 were investigated. Patients with Alzheimer disease were included in the study and were analyzed in terms of age, sex, reason for application, comorbid medical conditions, occupation, and place and status of living.

Results: There were 30 Alzheimer patients examined in the study period. Of these, 17 (56.6%) were male and 13 (43.3%) were female. The patients' ages ranged between 51 and 90 years, and the mean age was 78.7 years. The majority of cases (25, 83.3%) were transferred for evaluation of decision-making capacity, while only 5 (17.7%) were referred to our department for forensic reporting of bodily damage.

Conclusion: Forensic reporting of bodily damage in Alzheimer patients is similar to common injury cases. However, in conditions requiring evaluation of decision-making capacity in Alzheimer patients, all records should be carefully examined and a complete neuropsychiatric evaluation should be performed.

Key words: Alzheimer disease, forensic medicine, forensic report, impaired legal capacity, impaired decision-making capacity

1. Introduction

Throughout history, humans have aimed to live a longer life, which has been relatively achieved in recent decades via healthy living behaviors, medical care, and improved preventative measures. The average life expectancy at birth of the global population in 2011 was 70 years (1). However, increasing age-related medical conditions and comorbid diseases make the elderly vulnerable to all kinds of injuries. Besides problems related to old age, pathophysiological changes due to Alzheimer disease increase the number of legal situations that require forensic medicine evaluation.

Patients with Alzheimer disease might suffer from accidents due to a decline in motor functions and attention. Home injuries, and falls in particular, are among the common traumas in this population (2). Such trauma patients need to be examined and assessed according to the related articles of the Turkish Penal Code in terms of severity, cause, and manner of trauma, and for the exclusion of elder abuse. However, most such mild trauma cases are treated in emergency departments and discharged

without initiating the legal procedure. Besides being concerned about the victims of violence, the Turkish Penal Code deals with the criminal responsibility of mentally impaired individuals who allegedly are offenders of a crime. According to Article 32 of the Turkish Penal Code, a penalty shall not be imposed on a person who cannot comprehend the legal meaning and consequences of the act committed or whose ability to control one's own behavior is significantly impaired due to mental disorder (3).

In Alzheimer disease, cognitive impairment generally affects a person's decision-making capacity. In the early stages of the disease, patients may continue their daily routine to varying degrees; however, in the final stages, patients might not be able to take care of their basic needs, which certainly indicates failure of judgment (4). Therefore, judicial bodies need forensic reporting for the evaluation of such Alzheimer patients in terms of their legal and decision-making capacity. In this respect, these patients need to be examined and evaluated according to the terms of Articles 405 and 408 of the Turkish Civil Code (5).

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Depending on the severity of the situation, the court might appoint a person as guardian (*vasi* in Turkish) for a wide range of daily issues. The court may appoint a curator (*kayyim* in Turkish) for certain urgent and temporary issues. However, for patients with mild mental impairment, a legal advisor/mentor (*yasal danışman* in Turkish) might be appointed, according to the Turkish Civil Code (5,6). To the best of our knowledge, there has been no study dealing specifically with forensic reports issued for Alzheimer patients. Therefore, we aimed to determine the demographic and clinical characteristics of Alzheimer patients consulted for forensic evaluation.

2. Materials and methods

The records of the Department of Forensic Medicine of the Hacettepe University Medical Faculty were used. Patients' files and forensic reports issued in 2012 and 2013 were investigated retrospectively. A total of 1150 forensically qualified patients connected to our department were investigated. Those patients with Alzheimer disease ($n = 30$) were included in the scope of the study. All Alzheimer patients were analyzed in terms of age, sex, reason for application, comorbid medical conditions, occupation, and place and status of living. Findings are discussed in light of the related literature.

3. Results

Out of 1150 patients examined between the years of 2012 and 2013, 30 (2.6%) were Alzheimer patients. All Alzheimer patients were seen by judicial bodies such as a public prosecutor's office or the courts. Out of 30 Alzheimer patients, 17 (56.6%) were male and 13 (43.3%) were female, with a male-to-female ratio of 1.3/1. The ages of the patients ranged from 51 to 90 years, and the mean age was 78.7 years. The overwhelming majority of cases (25, 83.3%) were transferred for evaluation of decision-making capacity, while only 5 (17.7%) were referred to our department for forensic reporting of bodily damage. There were no cases transferred for the evaluation of criminal responsibility.

Out of the 30 patients, 29 were previously diagnosed with Alzheimer disease, while only 1 was newly diagnosed upon admission. All patients were also referred to the Departments of Psychiatry and Neurology. The patients' medical histories revealed that 20 (66.6%) patients had only 1 comorbid disease, while 8 (26.6%) suffered from multiple comorbid chronic medical conditions, and only 2 had Alzheimer disease alone. The most common comorbid medical condition was a cerebrovascular event (10 patients, 33.3%), followed by hypertension, Parkinson disease, and depression in 7, 5, and 5 patients, respectively. Out of all, 25 (83.3%) were on at least 1 medication.

Out of the 5 patients examined for forensic reporting of bodily damage, 4 had home accidents and 1 had a

traffic accident as a pedestrian with minor trauma. Of the home accidents, 2 were accidental falls and the other 2 were accidental burns. The fall cases had slight soft tissue injuries and were reported as minor accidental injuries. Among the burns, 1 was scalding and occurred while the patient was trying to carry soup prepared for dinner, and the other was a contact burn that occurred while placing a hot brick under her back. In both burn cases, the total body surface area involved was less than 5% with first- and second-degree burns. A mini mental state examination (MMSE) was not performed for these trauma patients.

Out of 25 patients examined for assessment of decision-making capacity, the reports of 21 concluded that the patient was suffering from impaired legal and decision-making capacity, and the need for guardianship was emphasized according to Turkish Civil Code Article 405; however, the reports of 4 Alzheimer patients were not completed because of an interruption of the evaluation process. Of patients with impaired legal capacity, 2 had severe Alzheimer disease with a MMSE score of <10 , 11 suffered from moderate Alzheimer disease with a MMSE score of 10–20, and only 1 patient had mild Alzheimer disease. Data regarding MMSE scores for the remaining patients were unavailable.

Regarding the professions of the patients, 19 (63.3%) were retired, 9 were housewives, 1 was a laborer, and 1 was a civil servant. In terms of living status, 13 (43.3%) patients were living with their children or other family members, 8 were living with their spouses alone, and 8 were living in a nursing home. Only 1 patient was living alone.

4. Discussion

Patients with Alzheimer disease in old age might suffer from accidents due to decline in motor functions and attention. Home injuries, falls, and pedestrian traffic accidents are among the common traumas in this population (2). Such trauma patients need to be examined and assessed according to the related articles of the Turkish Penal Code in terms of severity, cause, and manner of trauma and for the exclusion of elder abuse. In the present study, 5 patients were examined for forensic reporting of trauma. Of these, 4 had home accidents and 1 had a traffic accident as a pedestrian. In a study done by Doğan et al., falling was the most common home injury, followed by blunt traumas and burns, among home injuries in the elderly (7). A study dealing with forensic reports of elderly trauma patients revealed that most injuries were due to traffic accidents, as pedestrians in particular, and physical assault (8). However, in the presented series, falls and burns were equal in number. On the other hand, the number of trauma patients in our series was quite low compared to other studies (7,8) since most such mild trauma cases are treated in emergency departments with no inquiry into the details of the medical history and a failure to initiate

legal procedure. Another study by Karbeyaz and Balci reported 2 Alzheimer patients as victims of sexual assault (9). In contrast, no sexual assault victims with Alzheimer disease were seen by our department.

In Alzheimer disease, cognitive impairment generally affects a person's decision-making capacity. In the early stages of the disease, patients may continue their daily routine to varying degrees; however, in the final stages, patients might not be able to take care of their basic needs, which certainly indicates a failure of judgment (4). The importance of determining their legal or decision-making capacity is increasing because of financial issues and cultural changes. Furthermore, courts are encountering increasing numbers of contested guardianships and wills, and the prevalence of exploitation and abuse of elders, and those with dementia in particular, by strangers, friends, and family members is also increasing (10). Therefore, judicial bodies need forensic reporting for evaluation of such Alzheimer patients in terms of legal and decision-making capacity. To accomplish this, the courts transfer these patients to Departments of Forensic Medicine, Psychiatry, or Neurology to be examined and evaluated according to the terms of Articles 405 and 408 of the Turkish Civil Code. Based on a complete examination and assessment process, a forensic/expert witness report is issued. Considering the issued report and the requirements of the case, the court might appoint a guardian, a curator, or a legal advisor/mentor (6). In accordance with this, 21 of the 30 patients were determined to be suffering from impaired legal and decision-making capacity and were issued a report stating the need for guardianship according to Turkish Civil Code Article 405. As stated in the Alzheimer Europe report, Alzheimer disease is progressive in prognosis. The medical stage of each patient must be determined to find out to what extent the medical stage might affect the patient's ability of judgment. Based on this, the decision of whether or not the patient's decision-making capacity needs to be restricted can be made (6).

The literature states that the MMSE is not able to definitively identify stages of Alzheimer disease because it has no exact cut-off levels for staging (11,12). Nevertheless, the literature regarding MMSE of Alzheimer patients has shown that high or low scores are strong indicators of legal or decision-making capacity. Scores lower than 20 were reported to be indicative of impaired capacity, yet scores higher than 26 correlated with robust capacity (12–14). Accordingly, out of the patients reported as suffering from

impaired legal capacity, 2 had severe Alzheimer disease with MMSE scores less than 10, while 11 suffered from moderate Alzheimer disease with MMSE scores of 10–20, and only 1 patient had mild Alzheimer disease.

Studies have revealed that the number of elderly people admitted to emergency departments is increasing. These elderly patients appear with more comorbid diseases with atypical presentations compared to young individuals (15). In accordance with this, almost all of the patients in this study (28 patients) had at least 1 comorbid medical condition. Of these, 20 patients had only 1 comorbid disease, while 8 (26.6%) suffered from multiple comorbid chronic medical conditions. Interestingly, studies dealing specifically with forensic evaluation of geriatric patients have not proved anything definitively regarding comorbidity or medical history (8). However, a study regarding geriatric deaths revealed that the most common cause of death was cardiovascular diseases, followed by cerebrovascular events (16). However, in the presented series, besides Alzheimer disease, the most common comorbid medical condition was a cerebrovascular event (10 patients, 33.3%), followed by hypertension, Parkinson disease, and depression in 7, 5, and 5 patients, respectively.

Regarding the living status of Alzheimer patients, 13 (43.3%) were living with their children or other family members, 8 were living with their spouses alone, and 8 were living in a nursing home. Only 1 patient was living alone. Of the 30, 22 patients were widowed and 8 were married. In the series presented by Doğan et al., 15 out of 102 geriatric trauma patients were living alone, with 41 out of 102 widowed and the remaining married (7).

To the best of our knowledge, this is the first study specifically dealing with forensic reports issued for Alzheimer patients. Therefore, a limitation was that the obtained results could not be compared with similar series, and series that were only partially similar from geriatric studies were used for discussion.

In conclusion, patients with Alzheimer disease are mostly transferred to forensic medicine departments for forensic reporting of traumas and for evaluation of legal or decision-making capacity. Forensic reporting of bodily damage in Alzheimer patients is similar to that of common injury cases. However, in conditions requiring evaluation of decision-making capacity in Alzheimer disease patients, all medical records should carefully be examined and a complete neuropsychiatric evaluation should be performed.

References

1. United Nations Department of Economic and Social Affairs Population Division. World Mortality Report 2011. New York, NY, USA: United Nations; 2012.
2. Greubel DL, Stokesberry C, Jelley MJ. Preventing costly falls in long-term care. *Nurs Pract* 2002; 27: 83–86.

3. Turkish Penal Code. Law Number 5237, Official Gazette No. 25611 Dated 12.10.2004.
4. Scarpini E, Scheltens P, Feldman H. Treatment of Alzheimer's disease: current status and new perspectives. *Lancet Neurol* 2003; 2: 539–547.
5. Turkish Civil Code. Law Number 4721, Official Gazette No. 24607 Dated 08.12.2001.
6. Alzheimer Europe. The Ethical Issues Linked to the Perceptions and Portrayal of Dementia and People with Dementia. Luxembourg: Alzheimer Europe; 2013.
7. Doğan H, Canbaz S, Tander B, Pekşen Y, Cantürk F, Oruç NÖ. The prevalence of home injuries among elderly people in Samsun, Turkey, and the influencing factors. *Turk J Med Sci* 2010; 40: 651–658.
8. Gündüz T, Karbeyaz K, Yüksel F, Balcı Y. Yeni Türk Ceza Kanunu çerçevesinde geriatrik olgulara düzenlenen adli raporların değerlendirilmesi *Turk J Geriatr* 2010; 13: 8–12 (in Turkish).
9. Karbeyaz K, Balcı Y. Yaşlılıkta cinsel saldırı, Eskişehir deneyimi. *Turk J Geriatr* 2013; 16: 55–59 (in Turkish).
10. Moye J, Marson DC. Assessment of decision-making capacity in older adults: an emerging area of practice and research. *J Gerontol Psych Sci* 2007; 62: 3–11.
11. Appelbaum PS. Assessment of patients' competence to consent to treatment. *New Engl J Med* 2007; 357: 1834–1840.
12. Peterson A, Naci L, Weijer C, Cruse D, Espejo DE, Graham M, Owen AM. Assessing decision-making capacity in the behaviorally nonresponsive patient with residual covert awareness. *AJOB Neurosci* 2013; 4: 3–14.
13. Karlawish JH, Casarett DJ, James BD, Xie SX, Kim SY. The ability of persons with Alzheimer disease (AD) to make a decision about taking an AD treatment. *Neurology* 2005; 64: 1514–1519.
14. Kim SYH, Caine ED. Utility and limits of the mini mental state examination in evaluating consent capacity in Alzheimer's disease. *Psychiatr Serv* 2002; 53: 1322–1324.
15. Aköz M, Işık M, Şahin H, Emet M. Do characteristics of seriously injured older adults differ from those of their younger counterparts in the emergency department? *Turk J Med Sci* 2013; 43: 464–469.
16. Hilal A, Akcan R, Eren A, Turhan A, Arslan M. Forensic geriatric deaths in Adana, Turkey. *Arch Gerontol Geriatr* 2010; 50: e9–e12.