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The diagnosis of delirium among elderly patients presenting to the emergency department of an acute hospital

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ABSTRACT

Delirium is prevalent among elderly people presenting to an emergency department (ED). However, despite the fact that delirium is associated with longer hospital stays, an increased rate of institutionalization and higher mortality (especially in the case of undiagnosed delirium), this condition often goes undiagnosed by ED doctors. We examined the rate of mental status assessment and the prevalence of delirium in the ED among patients older than 65 years in a large teaching hospital in Southern Israel via a retrospective chart review. Surprisingly we found no diagnosis of delirium in the medical charts of representative sample of 319 elderly people. Furthermore, only 12.5% of people received either an adequate or even a partially adequate mental status assessment by the ED doctors. We attribute these negative findings not to a low incidence of delirium but probably to a combination of a heavy workload along with a lack of adequate training of ED physicians. We suggest that part of the solution involves providing appropriate education to ED physicians as well as adding a geriatric consultant to the ED roster.

1. Introduction

The essential features of delirium include disturbances of consciousness, attention, cognition, and perception. The syndrome develops over a short period of time (usually hours to days) and tends to fluctuate during the course of the day (Anonymous, 1999). The overall rate of delirium in hospitalized elderly (65+) patients has been reported to range between 14.8% and 25.0% (Rockwood, 1989; Francis et al., 1990; Johnson et al., 1992; Pompei et al., 1995; Inouye et al., 2005), in general medical wards from 14% to 53% (Chisholm et al., 1982; Kolbeinsson and Jonsson, 1993) and in surgery and orthopedic wards between 14% and 51.5% (Millar, 1981; Williams et al., 1985; Edlund et al., 2001; Marcantonio et al., 2002). The prevalence of delirium among elderly patients in the ED has been reported to range from 7% to 24% (Lewis et al., 1995; Naughton et al., 1995; Elie et al., 2000; Hustey and Meldon, 2002; Hustey et al., 2000, 2003; Kakuma et al., 2003). Using a broader definition, the prevalence of cognitive impairment among elderly patients in the ED rises to between 26% and 39.9% (Gerson et al., 1993; Naughton et al., 1995; Hustey and Meldon, 2002; Hustey et al., 2000, 2003).

In elderly patients, delirium is associated with a longer hospital stay (Francis et al., 1990; Cole and Primeau, 1993; McCusker et al., 2003), an increased rate of long-term institutionalization (Cole and Primeau, 1993; George et al., 1997; McCusker et al., 2001; Marcantonio et al., 2002) as well as increased mortality (Cole and Primeau, 1993; George et al., 1997; Marcantonio et al., 2002; McCusker et al., 2002; Kakuma et al., 2003). One study (Kakuma et al., 2003) reported a mortality rate which was much higher in patients with undiagnosed delirium (30.8%) than in those in which it was diagnosed (11.8%). Despite these facts, delirium often goes undiagnosed. For example, ED doctors in several countries diagnosed only 28–38% of all cases of mental status impairment

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(Hustey and Meldon, 2002; Hustey et al., 2000, 2003) and only 9–35.3% of patients with delirium were detected by the ED physicians (Johnson et al., 1992; Lewis et al., 1995; Elie et al., 2000; Hustey and Meldon, 2002; Hustey et al., 2003).

We examined the rate of mental status assessment and the prevalence of delirium diagnosis in the ED for patients older than 65 years at the Soroka Hospital in Beersheva, Israel.

2. Patients and methods

2.1. Assessment of delirium diagnosis

For the 12-month period between 1 January 2003 and 31 December 2003 we examined retrospectively a simple random sample of medical records of patients over age 65 admitted to the ED (excluding gynecology) of the Soroka Medical Center. This hospital is a 1000-bed acute center affiliated with the Ben-Gurion University in Beersheva, Israel. We examined the charts of all patients with the diagnosis of "delirium" (or all synonyms such as "acute confusional state", "acute brain syndrome", etc.). Another study goal was to evaluate the rate and quality of mental state assessment as performed by ED physicians. Utilizing the DSM IV diagnostic criteria for delirium, we checked each of 319 medical records for any assessment of the six aspects of attention, orientation, memory deficit, language disturbances, perceptual disturbances or acute onset. We considered the mental status assessment as "adequate" if the ED doctor related to 4–5 of those points, partial if 2–3 points were noted, and "inadequate" if only 0–1 point was noted.

2.2. Statistical methods

We used the StatCal software of EpiInfo 6 for the calculation of study sample. We calculated upper and lower limits to the expected incidence of delirium diagnosis in our ED as follows: of the articles surveyed (Lewis et al., 1995; Naughton et al., 1995) the highest incidence of delirium was reported to be 9.6% (Lewis et al., 1995) of which just over a third (35.3%) was recognized by ED physicians, so the upper limit of delirium diagnosis is 3.5% (35% of 9.6% $\approx$ 3.5%). For the lower limit (Naughton et al., 1995) we calculated (16% of 7%) to be 1%. The calculated study sample from 23,014 people assessed in the ED during the study period for a confidence level of 95% was 206 people. Given that we expected some missing data in the handwritten ED charts, we checked a random sample (by batch numbers generated by computer program) of 319 charts. To analyze the association of delirium assessment with different variables, χ^2-statistic was used. We used the Fisher's exact test to calculate odds ratios. Statistical significance was determined at the $p < 0.05$ level throughout.

Table 1
Basic characteristics of admission and assessment in ED of 319 elderly (65+) patients versus all elderly (65+) patients visited ED during 2003

Parameters	Inadequately assessed	Adequately assessed	Study population
Number	279	40	319
Age (years) mean ± S.D.	74.7 ± 7.5	79.7 ± 7.8	75.3 ± 7.7
Gender, female, *n* (%)	162 (58.0)	25 (62.5)	187 (59)
Living in community, *n* (%)	259 (92.8)	35 (87.5)	294 (92.2)
ER discharge status, *n* (%)			
Home	126 (45.2)	13 (32.5)	139 (43.6)
Hospitalized	153 (54.8)	26 (65.0)	179 (56.1)
Death	0 (0)	1 (2.5)	1 (0.3)
Total	279 (100)	40 (100)	319 (100)
Five most frequent problems diagnosed in ER, *n* of cases[a]			
Cardiovascular	126	14	140
Gastrointestinal	46	2	48
Urinary	29	6	35
Neurological	10	20	30
Fever	19	8	27
Admission location of hospitalized patients, *n* (%)			
Internal medicine	132 (86.3)	18 (69.2)	150 (83.8)
Surgery	9 (5.9)	0 (0)	9 (5)
Neurology	4 (2.6)	4 (15.4)	8 (4.5)
Orthopedics	5 (3.3)	0 (0)	5 (2.8)
Neurosurgery	1 (0.7)	2 (7.7)	3 (1.7)
Geriatric department	0 (0)	2 (7.7)	2 (1.1)
Other	2 (1.3)	0 (0)	2 (1.1)
Total	253 (100)	26 (100)	179 (100)
Specialties of ER-doctors[b]			
Internist	213	28	241
Family physician	15	7	22
Neurologist	11	17	28
Neurosurgeon	1	4	5
Orthopedist	29	1	30
General surgeon	32	5	37
ENT specialist	4	1	5
Ophthalmologist	8	1	9
Geriatrician	1	1	2

[a] Since patients could have more than one problem, $n \neq 319$.
[b] In most cases patients were evaluated by more than one specialist who could be either a consultant or a resident.