

SHORT REPORT

Do older hospital patients recognize adverse drug reactions?

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Abstract

Objective: to establish the relationship between subjective complaints of side effects of drugs and the objective presence of adverse drug reactions in older patients.

Design: observational cross-sectional study.

Setting: five medical wards at the University Hospital Rotterdam Dijkzigt.

Subjects: patients aged 70 and over admitted to the general medical wards over a 3-month period.

Methods: statistical comparison and Kramer's algorithm.

Results: of 106 patients, 102 used medication, and 93 of these were able to report whether they believed they were experiencing drug side effects. Thirty-six [39% (95% confidence interval 28.8–48.6)] believed that they were experiencing side effects and the number of diagnoses per patient and the proportion of patients with chronic obstructive pulmonary disease was higher in these 36 'complainers' than in the group of the 'non-complainers'. We found a correct opinion (true positive and negative) about the objective presence or absence of mild or severe adverse drug reactions in 79% (95% confidence interval 70.2–86.8). Asking the patient about side effects of drugs had a sensitivity of 0.70 and a specificity of 0.85 patients. The severe adverse drug reactions in 21 patients were not recognized by 14 of them.

Conclusion: at hospital admission, older patients should be asked about drug side effects because they are often correct in recognizing them. However, severe adverse drug reactions are not easily recognized.

Keywords: detection of adverse drug reactions, elderly, hospital, recognition of adverse drug effects

Introduction

Patients' perceptions of the presence of adverse drug reactions may be important in their prevention [1]. In one outpatient study of all ages, 80% of those with an adverse reaction recognized that their medication was responsible for it [2]. However, the recognition of adverse drug reactions may not be the same in all age groups. One study showed that in older people a lower number of adverse symptoms was attributed to their medications than in younger subjects [3].

None of the above studies related the complaints of

the patients about the presence of drug side effects to the presence of well defined adverse drug reactions. No study has been published on the recognition of adverse drug reactions by older hospital patients.

Methods

We included patients aged 70 and over admitted to our general medical wards over 3 months. We excluded re-admissions within a month and patients transferred from other hospital wards.

We interviewed the patients and performed a physical examination. We asked the patients whether they believed they had complaints caused by their medication and grouped them into 'complainers' and 'non-complainers'—those who believed that their complaints were caused by medication and those who denied this. Separately, we analysed the patients for the objective presence of adverse drug reactions using Kramer's algorithm [4, 5]. A reaction that was potentially life-threatening or directly responsible for hospital admission was defined as severe. We used the same patient population for another study in which we examined the severity of adverse drug reactions as a cause of hospital admission [6].

We analysed social and biodemographic characteristics and data on diagnoses and drugs. Differences between groups of patients were tested using the χ^2 (if suitable) or Fisher's exact test for dichotomous variables, and the *t*-test or Mann-Whitney test for continuous variables. The results of all tests are expressed as a two-tailed *P*-value. A test result is considered statistically significant when *P* < 0.05. Statistical analyses were performed with the SPSS/PC+ package, version 5.0.1.

Results

Of the 106 patients included, 60 were women. The mean age was 78.0 years (25–75 percentiles: 70.0–91.1 years). On average they took 5.9 drugs (25–75 percentiles: 3.0–8.0 drugs). Four patients, all men, took no drugs and we excluded them from further analysis. We could not analyse nine patients, because of altered consciousness (coma in five, delirium in three) or because of severe dementia [7] (one patient).

Of the remaining 93 patients, 36 were 'complainers'. They cited 60 complaints (Table 1). We found a single complaint in 56%, two in 31% and up to six in the remainder of the group.

The most frequent drugs implicated were non-steroidal anti-inflammatory drugs in six patients (17% of the 'complainers', 26% of those using non-steroidal anti-inflammatory drugs) and iron preparations in three (8% of the 'complainers', 30% of the patients taking iron preparations), both being responsible for digestive complaints. Furthermore, four patients using loop diuretics (11% of the 'complainers', 14% of the users of loop diuretics) claimed that these drugs were responsible for their urinary incontinence.

We compared patient characteristics of the 'complainers' to those of the 'non-complainers'. The 'complainers' had more diagnoses than the 'non-complainers' [5.0 (25–75 percentiles: 3.0–7.0) *versus* 4.0 (25–75 percentiles: 3.0–5.0), *P* = 0.02] and more of them had chronic obstructive pulmonary disease (33% *versus* 14%, *P* = 0.03). Other patient characteristics did not differ between the two groups.

Table 1. Complaints reported by the 36 'complainers'

Complaint	<i>n</i>	No. (and %) of subjects reporting
Digestive system	15	15 (42)
General	11	11 (31)
Circulatory	9	6 (17)
Bleeding	7	7 (19)
Genito-urinary	4	4 (11)
Metabolic	3	3 (8)
Neurological	3	3 (8)
Skin	3	3 (8)
Locomotor	2	2 (6)
Sleep	2	2 (6)
Psychiatric	1	1 (3)
Total	60	36 (100)

We related the subjective complaints to the objective presence of adverse drug reactions. We found a correct opinion about the relationship between complaints and medication in 73 (79%) of the 93 patients. Twenty-eight of these 73 recognized the objective presence of the reaction (true positive), and 45 'non-complainers' affirmed the absence of the reaction (true negative). Asking about side effects of drugs had a sensitivity of 0.70 and a specificity of 0.85. Two of the patients who recognized an adverse reaction stopped the responsible drug. Both had a reaction which led to hospital admission. We found a severe adverse reactions in 21 patients, 14 (67%) of whom had not recognized it.

Discussion

In this study of 102 older patients in hospital who were using medication, 93 were able to say whether they believed they were experiencing drug side effects. The answer was yes in 39% (95% confidence interval 28.8–48.6). We related the subjective complaints to the objective presence of adverse drug reactions according to Kramer's algorithm and found a sensitivity of 0.78 and a specificity of 0.79. The predictive negative value of the question about side effects was 0.85 and the predictive positive value 0.70. At the same time, 14 (67%) of 21 severe adverse reactions were not recognized by patients. We found that the presence of more diagnoses and the diagnosis of chronic obstructive pulmonary disease was related to being a 'complainer' and not the number of drugs.

A New Zealand outpatient study of patients of all ages found the same proportion of patients correctly complaining about adverse drug effects [2]. Our hospital study found a proportion of 'complainers' to

be comparable to the results among the younger subjects of an English outpatient study (33.5% in subjects under 65 years, *versus* 25.2% of subjects aged 65 years and older) [3]. Older people are therefore no less capable of recognizing adverse drug effects.

This study is the first to demonstrate that most older patients admitted to hospital are capable of identifying side effects of drugs correctly but often do not recognize adverse drug reactions.

Key points

- Older hospital patients are often correct in recognizing drug side effects.
 - Asking the older patient about adverse drug reactions at the time of hospital admission can improve detection of these adverse reactions.
 - Severe adverse drug reactions tend not to be recognized by the older hospital patient.
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References

1. Egberts TCG, Smulders M, Koning de FHP *et al.* Can adverse drug reactions be detected earlier? A comparison of reports by patients and professionals. *Br Med J* 1996; 313: 530-1.
2. Kellaway GSM, McCrae E. Intensive monitoring for adverse drug effects in patients discharged from acute medical wards. *N Z Med J* 1973; 78: 525-8.
3. Klein LE, Germans PS, Levine DM *et al.* Medication problems among outpatients. A study with emphasis on the elderly. *Arch Intern Med* 1984; 144: 1185-8.
4. Kramer MS, Leventhal JM, Hutchinson TA *et al.* An algorithm for the operational assessment of adverse drug reactions. I: Background, description, and instructions for use. *JAMA* 1979; 242: 623-32.
5. Hutchinson TA, Leventhal JM, Kramer MS *et al.* An algorithm for the operational assessment of adverse drug reactions. II: Demonstration of reproducibility and validity. *JAMA* 1979; 242: 633-8.
6. Mannesse CK, Derkx FHM, De Ridder MAJ *et al.* Contribution of adverse drug reactions to hospital admissions of older patients. *Age Ageing* 2000; 29: 35-9.
7. Quick References to the Diagnostic Criteria from DSM IV. Washington, DC: American Psychiatric Association, 1994.

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