

EDITORIALS

Adverse drug reactions in elderly: challenges in identification and improving preventative strategies

The use of medication among the elderly population has increased tremendously over the last decade. However, the benefits of medications are always accompanied by potential harm, even when prescribed at recommended doses based on approved guidelines. The elderly are particularly at increased risk of adverse drug reactions (ADR) [1] attributed in the main to polypharmacy and physiological changes affecting the pharmacokinetics and pharmacodynamics of many drugs or poor compliance due to cognitive impairment or depression.

The reported prevalence of ADR has not changed over the past decade. The average rate of ADR-related hospital admission is 16.6% in the elderly compared to 4.1% in younger patients, with 88% considered preventable [2]. Studies specifically undertaken in the older age group have found that 24% of patients are admitted due to ADR [3] and 14% experience an ADR as an inpatient [4]. In 2004, the annual cost of ADR-related admissions to the NHS was estimated at £466 m [5].

There is increasing interest among clinicians and researchers to find ways to reduce the occurrence of ADR. The main determinant in this reduction is the correct identification of ADR. Not all clinicians, pharmacists, nurses or patients are able to accurately identify ADR and this is due to many reasons including education, expectations and previous experience. It is further complicated in the elderly where the presentation of an ADR is often atypical and non-specific. The ADR may be ascribed to 'frailty', to an already existing diagnosis or to the onset of a new medical problem. For example, falls, delirium, drowsiness, lethargy, light-headedness, apathy, urinary incontinence, chronic constipation and dyspepsia are often accepted as a primary diagnosis rather than secondary to medication.

The inability to distinguish drug-induced symptoms from a definitive medical diagnosis often results in the addition of yet another drug to treat the symptoms, which increases drug–drug interactions and ADR, known as 'the prescribing cascade' [6]. The use of inappropriate medications in the elderly has also been described as a potential cause of ADR [7]. However, several studies failed to prove this association [8, 9].

In an attempt to improve identification of ADR in elderly patients, it is advisable for clinicians to always consider the (side) effects of medication high in the differential diagnosis of clinical symptoms. Knowledge of the most common ADR

and the most frequently responsible agents in this age group along with the relationship of medication and symptoms will improve identification of the ADR and the 'culprit'.

There are 34 different methods available to evaluate the likelihood that observed adverse events are due to a particular drug [10]. One of the most widely used methods for evaluating causality is algorithms, e.g. Naranjo [11]. An algorithm is a clinical instrument in the form of a questionnaire that gives detailed operational criteria for ranking the probability of causation when an ADR is suspected [10]. These assessment tools focus clinical attention, but they have diagnostic limitations. Also, the availability of different algorithms contributes to the lack of congruency in achieving a clinical consensus. This is further confounded by interprofessional variability in assessments. So how can we prevent the occurrence of ADR if we do not agree on the diagnosis of the problem? There is also no single empirical method available at the moment to assess the likelihood that an ADR has taken place.

When a drug is suspected as the cause of an acute change in a patient's clinical condition, the clinician should initially consider the known adverse events of the particular drug. This is limited by the knowledge that not all events, especially rare events, are reported or documented, particularly for newly marketed drugs. If the suspected reactions are a known toxicity of a particular drug, then the link between the onset of the reaction and drug administration should be established. Other conditions that may predispose patients to such reactions should be considered, e.g. hypokalaemia in digoxin toxicity. Additional information should include co-medication, previous experience by patients, disease exacerbations, dechallenge, rechallenge and objective evidence.

An important risk factor for developing ADR is the previous occurrence of ADR. Re-exposure to offending drugs due to poor documentation can cause the patient to experience the same ADR again, thus emphasising the importance of accurate documentation of ADR at the time of the event and providing relevant information to the patient about ADR to help prevent further occurrence.

Currently, the main mechanism for identifying drug or population factors associated with ADR is national pharmacovigilance systems, for example the Yellow Card System in the UK. Such records have evolved over recent years, to include electronic reporting as well as pilot schemes involving submissions from the general public. However, this may not

be the most robust or appropriate method for the identification of ADR in acute settings due to the complex relationship between drug-related factors (pharmacology), patient-related factors (physiology) and environmental factors. Built-in computer programmes or software with electronic prescribing databases and greater clinical pharmacist involvement in patient care might help to highlight inappropriate prescribing and minimise the occurrence of ADR [12].

Prevention of ADR by identifying individuals at high risk is central to improving patient care and outcomes. The use of a tool or risk score to alert medical teams to such patients is currently under validation and is the subject of a multi-centre European trial. The trial is being conducted in four Academic Departments of Geriatric Medicine in the UK, Belgium, Italy and The Netherlands. This trial is funded by a research grant from GerontoNet [13]. The risk score would allow stratification of patients according to the likelihood of developing an ADR based on drug type, the patient's functional and clinical characteristics, and is hoped to significantly improve prescribing practice and reduce the occurrence of ADR amongst elderly patients. The prescribing physician should calculate the score on admission and identify patients with high scores to determine the clinical relevance.

The diagnosis of ADR in the elderly will remain a challenge for the diagnostic skills of even the most experienced clinician. The basic rule in the process of identifying an ADR is simply to ask oneself 'Could this patient's condition be due to one or more of the drugs he/she has taken?' Additional monitoring and attention towards patients who are at high risk could reduce the impact of ADR both in terms of cost and quality of care.

Conflicts of interest

No conflicts of interest.

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