Digoxin therapy and monitoring heart rate

By Neil Petrie

It is important for accredited pharmacists to work as part of the healthcare team. This is particularly important when undertaking medication reviews in Residential Aged Care Facilities. As pharmacists, we bring a set of skills to the team that can assist facilities to refine policy and procedures for overall improved management of the residents’ care.

When reviewing a resident’s medication, I often see nurses routinely checking pulses of people on digoxin and recording the result on the medication chart as this is generally what they have been trained to do. I am frequently asked whether this practice needs to continue due to the time consuming nature of doing so and whether there are any benefits as a result. The main premise for taking an apical pulse before administering the dose of digoxin is to allow the dose to be withheld if the pulse rate is below 60 bpm.

Digoxin has a narrow therapeutic index and toxicity can occur, especially in the elderly and people with electrolyte disturbance, hypoxia or hypothyroidism.1

Digoxin certainly does slow the heart rate. However, bradycardia alone is not always a sign of toxicity.1 In elderly people the symptoms of toxicity likely to present first are anorexia, nausea and confusion. Therefore, bradycardia with no other signs of toxicity is not necessarily an indication to withhold a dose. There may be times when checking the pulse is appropriate, such as when initiating therapy with digoxin, when medication changes have occurred or with unstable renal function. The Australian Medicines Handbook recommends regular assessment for digoxin toxicity, including resting heart rate, but routine monitoring is not necessary.1 Hence, the overall clinical state of the resident needs to be considered. Very few references now recommend daily monitoring of pulse.

The other question to consider is whether withholding a dose of digoxin may potentially affect control of episodes of supraventricular tachycardia.

There are a number of ways by which accredited pharmacists can improve medication management practices. These include:

• Discussing issues such as the routine taking of pulse prior to administration of digoxin at the facility’s Medication Advisory Committee meeting. Policies and procedures can then be developed with input from doctors, nurses and pharmacists.
• Including discussion in medication review reports on how best to monitor digoxin therapy.
• Providing education sessions to nursing staff on topics of interest and including practical pointers on how to identify digoxin toxicity. This may include a discussion on the usefulness of taking the resident’s pulse.

The most succinct guideline that I have seen was developed by an American Consultant Pharmacist, Alan J. Vogenberg, RPh, FASCP in 2004.

“When an order for any digitalis glycoside (digoxin) is prescribed for a resident, his or her pulse rate is to be checked once a week and recorded on the Medication Administration Record. If the resident’s apical pulse is less than 60 [bpm], the medication is to be given as ordered and the apical pulse is to be monitored daily for three (3) days (continuing to administer the medication). If the apical pulse rate continues at less than 60 [bpm] after three (3) days, the medication is to be held and the attending physician notified of the three (3)-day apical pulse rate.”2

As with the routine monitoring of a resident’s pulse, the routine monitoring of serum digoxin is also unnecessary unless there is a particular reason for doing so.

The Australian Medicines Handbook Aged Care Companion, 3rd Edn, recommends monitoring serum digoxin in the following circumstances:

• if toxicity is suspected
• when renal function is deteriorating
• where hypoxia occurs
• where hypothyroidism exists
• where electrolyte disturbance exists
• when interacting drugs are commenced or ceased.3

Serum digoxin levels should always be interpreted in the overall clinical context. Assessment in relation to the clinical state of the resident is important when assessing appropriateness of any drug therapy. Whenever we suggest serum levels of drug therapy as pharmacists, we need to be aware that these results should be looked at in conjunction with the clinical state of the patient. Hence, an isolated serum digoxin level should not be used alone as a basis for increasing or decreasing a digoxin dosage.

Policies developed need to be relevant and applicable to each individual facility. The issue of drug therapy monitoring, including the necessity of checking apical pulse, offers a good topic for discussion at the next Medication Advisory Committee meeting. Regular communication between pharmacists and nurses is essential. Policies and procedures need to be re-evaluated on a regular basis to ensure that practices result in positive outcomes for residents. Pharmacists have the necessary expertise to advise nurses and management in aged care facilities on the Quality Use of Medicines.

References

