Angina: management in the elderly

Although coronary heart disease is a condition that predominantly affects the elderly, the majority of trials investigating it have focused on younger patients. This has meant best practice management for the condition in the elderly has yet to be established. In view of this, Dr Kristian Bailey and Professor Alistair Hall review the management options for angina in the elderly.

Cardiovascular disease is the largest cause of death in the UK, with Coronary Heart Disease (CHD) being the single largest contributory factor. Although mortality from CHD has fallen annually since the early 1980s, the disease burden has steadily increased with approximately two million people in the UK currently living with angina. Between 1994 and 2003 the proportion of men over 65 years with CHD rose from 21.9 per cent to 24 per cent, whereas in the 55–64 year age group the incidence rose slightly from 10.3 per cent to 11.4 per cent¹. In 2003 there were approximately 114,000 deaths from CHD in the UK – nearly 100,000 of which occurred in the over 65 years age group.

Although CHD is therefore predominantly a condition affecting the elderly population, much of the emphasis of treatment is often focused on younger patients; and certainly the majority of the large cardiovascular trials guiding treatment are conducted in the younger age group. Given that elderly patients are more likely to suffer from concomitant medical conditions, it is not surprising that many are excluded from clinical trials.

Special considerations
Factors that have to be taken into account when managing older patients include a higher incidence of renal impairment, a greater sensitivity and intolerance to medication, a greater incidence of polypharmacy with subsequent potential drug interactions, and a greater incidence of additional medical conditions or general frailty. In addition to these general factors, elderly patients with CHD are more likely to have more extensive disease and a higher incidence of multi-vessel disease. Often these factors combine in such a way that they lead to patients having more severe disease, which is unsuitable for Percutaneous Intervention (PCI) and where surgical intervention is deemed too high risk. Symptom management (i.e. control of angina or breathlessness) therefore often takes priority.

Diagnosis
The cornerstone of angina diagnosis remains the clinical history. Suspicion should be raised by a history of exertional chest pain or breathlessness eased by resting. With the introduction of the
National Service Framework (NSF) for Coronary Heart Disease, there are now clear guidelines for the assessment of new onset chest pain that may be cardiac in origin.

According to the NSF, all patients should have access to a Rapid Access Chest Pain Clinic within secondary care for assessment within two weeks after onset of symptoms. In the extremely elderly or infirm, this may be inappropriate and symptomatic treatment may be started on the basis of a presumptive diagnosis alone. Factors that mimic or confound angina should be sought such as gastro-oesophageal reflux, respiratory disease and anaemia.

Age per se should not be a limit to the diagnostic pathway undertaken; however modification will occur dependent upon co-morbidity. A baseline electrocardiogram (ECG) should be performed in all patients to look for evidence of previous Myocardial Infarction (MI), left ventricular hypertrophy, left bundle branch block or arrhythmia (particularly uncontrolled atrial fibrillation). Evidence of ischaemia should be also sought by exercise ECG, stress echocardiography or myocardial perfusion scanning, dependent upon individual patient characteristics.

A higher threshold for invasive investigations, i.e. coronary angiography, is often set in the elderly population and is usually only undertaken following a trial of medical therapy. This reluctance to subject the elderly to invasive investigation results from the perception that elderly patients are at greater risk of procedural complications and are less likely to be suitable for revascularisation. However, this should be determined on a per patient basis.

But by one year there was no difference in all cause or cardiac mortality between the two groups. This would therefore appear to support the strategy of optimising medical therapy in the first instance – although invasive investigation and revascularisation should be offered to elderly patients with ongoing symptoms despite medical therapy and irrespective of age.

Medical management takes two forms: secondary prevention and symptom management.

Secondary prevention
All patients with suspected or confirmed coronary disease should be commenced on anti-platelet therapy to reduce the risk of a thrombotic event. Low dose aspirin (75mg daily) is usually the first agent of choice. Alternative anti-platelet agents can be used if the concern of gastrointestinal side-effects is high; however, the addition of a proton pump inhibitor along side aspirin is equally effective and more economical.

All patients, whatever their age, should be commenced on a statin to lower cholesterol, unless there are specific contraindications. Evidence for use of statins in the elderly is scant but PROSPER (Pravastatin in elderly individuals at risk of vascular disease) demonstrated a significant reduction in CHD death or non-fatal MI in patients aged 72–80 years following three years’ treatment with pravastatin compared to placebo. There was no difference in the incidence of adverse events between treatment groups. Concerns do remain that elderly patients are more at risk from side-effects or adverse events from statin therapy and a lower starting dose is usually recommended; caution should be exercised particularly with respect to drug interactions and renal impairment.

Symptom control
Symptom management is brought about by reducing myocardial ischaemia. This is achieved either by reducing heart rate or improving coronary blood flow. Rate-control is achieved either by Beta-blockers (ß-blockers) or Calcium Channel Blockers (CCBs). ß-blockers are usually the agents of choice as they are effective for symptomatic relief and have prognostic benefit. Rate-limiting CCBs (such as diltiazem or verapamil) are usually used as an alternative agent if patients are intolerant or have contraindications.
to β-blockade. CCBs do provide symptomatic relief but lack prognostic benefit; they also have marked limitations on usage in patients with impaired left ventricular function as they are negatively inotropic.

Agents that improve coronary blood flow by achieving coronary artery dilation are nitrates, potassium channel activators (i.e. nicorandil) and CCBs (amlodipine, nifedipine etc.). All these agents act on vascular smooth muscle cells and result in coronary artery dilatation. These agents are not, however, specific to coronary vasculature and also act upon the systemic circulation, which accounts for their predominant side-effect of hypotension. The rate-limiting agents also have a tendency to induce hypotension.

**Avoiding side-effects**

With increasing age, the incidence of side-effects tends to increase and combination of multiple anti-anginal agents can cause marked symptomatic hypotension (either sustained or postural). These effects can be reduced by using slow-release preparations, particularly long-acting nitrates, as they have a gentler onset of action and less dramatic peaks in plasma concentration. Treatment often has to be implemented at lower doses than in the middle-aged population and titrated accordingly. It is preferable to increase the dose of a single agent to the maximum tolerated before introducing additional agents, thereby reducing the potential for side-effects and drug interactions.

**New treatments**

The new agent ivabradine could prove invaluable for the treatment of angina in patients prone to hypotension. Ivabradine acts by inhibiting the If iron transfer current (the so called ‘funny current’) within the sino-atrial node – slowing the intrinsic pacemaker rate. It is the first in a novel class of agents acting specifically within the sino-atrial node, thereby reducing ventricular rate without causing systemic hypotension.

It has been shown to be as effective as β-blockade at reducing anginal symptoms, and it can be used as an alternative in patients who are intolerant of β-blockers. Due to its acting within the sino-atrial node, it lacks any efficacy in patients with atrial fibrillation and should only be used in patients who are in sinus rhythm. Long-term outcome trials are currently ongoing.

In addition to development of new anti-anginal drugs there are continuing advances in PCI, with increasing availability to patients who were traditionally considered to have disease that was too complex for angioplasty. There is an increasing use of angioplasty in Left Main Stem (LMS) disease that could provide an alternative to surgery, although current guidelines still recommend surgical intervention for LMS stenosis. With ongoing advances in percutaneous techniques, the clinical outcome of LMS angioplasty is improving. However, factors that make a patient high risk for surgery also render them high risk for percutaneous procedures.

**Intractable symptoms**

Occasionally, despite maximal combination therapy, some patients continue to experience intractable angina on minimal exertion. If they are unsuitable for revascularisation, their management becomes difficult. A small proportion of patients do commence opiates for angina pain, which can be an effective strategy.

There is some evidence to suggest that opiates may reduce myocyte damage resultant from ischaemia and that benefits arise from more than just their analgesic properties. Patients with intractable angina do necessitate frequent admissions to hospital as a result of their symptoms. Addition of low-dose long acting opiates can dramatically reduce the number of hospital admissions, but they do not appear to

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**Key points**

- The incidence of CHD in the elderly population is high and accounts for a significant number of deaths and admissions to hospital.
- Most trials are performed in younger patients but there is a small amount of data in the elderly.
- PCI does decrease morbidity but not mortality in this age group, so treatment of symptoms and secondary prevention is a reasonable approach.
- Older patients are more likely to have polypharmacy and are therefore at greater risk of drug interactions.
- Care should be taken with drug dosages and drugs may need to be started at a lower dose.
mask an acute ischaemic event\textsuperscript{10}. Side-effects at low-dose are not usually troubling.

Patients with intractable angina should be offered the opportunity of a pain specialist review, which may recommend interventional strategies such as a stellate ganglion block, directly inhibiting pain reception.

**Conclusion**

Strategies for the management of angina in the elderly population should be the same as within a younger population. Medical management needs to be optimised and options for revascularisation ought to be considered on a per patient basis. Successful revascularisation does result in a significant reduction in morbidity but has no impact on mortality at one year\textsuperscript{3,4}.

Care needs to be taken when manipulating anti-anginal medication, as the incidence of side-effects is higher in the elderly population.

Finally, there needs to be good communication between primary and secondary care (and also with the patient) to ensure all parties are aware of the management strategies. This is especially important in order to explain why particular treatment options are not being undertaken so that viable alternative treatment strategies can be focused upon\textsuperscript{6}.

### References

8. McPherson BC, Yao Z. Morphine mimics preconditioning via free radical signals and mitochondrial K\textsubscript{ATP} channels in myocytes. *Circulation* 2001; **103**: 290–95

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