The implantable loop recorder in older patients with syncope: is sooner better?

Syncope is common in older people, with a three- to four-fold rise in syncope incidence with advancing age [1, 2]. Older patients with syncope disproportionately bear the burdens of morbidity, mortality and hospitalisations [1-3], while comorbidity, polypharmacy, cognitive impairment and age-related physiological change can make assigning a cause of syncope challenging. Older patients are much more likely to have a cardiac (and in particular arrhythmic) cause of syncope than younger patients, with up to 30% of older patients with syncope having such underlying diagnoses [1]. Current guidelines [1] advocate an initial evaluation strategy of detailed history, clinical examination, orthostatic blood pressure measurement and 12-lead ECG with subsequent investigations dictated by the likely aetiology based on this initial workup. The implantable loop recorder (ILR) has a role to play when the suspected aetiology is arrhythmic, either primary cardiac rhythm disturbance or as part of neurally mediated syncope, and is currently considered at the end of a series of investigations, which may include ambulatory or external loop recorder monitoring, tilt testing, carotid sinus massage, echocardiography and exercise testing. Where the cause of syncope remains unknown, the ILR has become the diagnostic test of choice when arrhythmic syncope is suspected but more invasive tests including electrophysiology studies are contraindicated, unlikely to be helpful or simply not available. ILRs are implanted in a pre-pectoral pocket in the left hemithorax (similar to a permanent pacemaker) under local anaesthetic, with a low procedure complication rate (1%, largely infection-related [4]). The models currently available in the UK have the approximate dimensions of a USB memory stick (Reveal™ DX, Medtronic Inc., Minneapolis, MN and SJM Confirm™, St Jude Medical, St. Paul, MN) and record a high-fidelity bipolar ECG signal stored as a loop, which can be frozen at the time of symptoms using a handheld activator by the patient, or auto-activated based on preset bradycardic or tachycardic parameters. ILRs’ key strengths lie in ECG monitoring of infrequent episodes and the ability to retrospectively assess heart rate and rhythm during a syncopal episode, both of which allow symptom–rhythm correlation, the gold standard of syncope diagnosis.

Clinical studies examining ILR use in older people are sparse. The first examined 15 patients (mean 73 years, range 61–89 years) with unexplained syncope, falls or both [5]. During 0–14 months’ follow-up, there were seven successful device activations, four identifying arrhythmia and three normal sinus rhythm [5]. While four patients experienced problems with device activation (auto-activation technology was not yet available), the high diagnostic rate established the viability of ILR use in an older cohort. The only other study to specifically assess ILR use in recurrent syncope in older people examined 103 patients split into 78 under- and 25 over-65s [6]. The older group had three-fold higher probability of an arrhythmia being recorded and were 3.8 times more likely to receive a final diagnosis [6].

Study design and data quality are thus problematic in the ILR field, with numerous observational studies [7-12] and only two randomised controlled studies in any age group [13, 14]. Both of these, however, recruited largely older patients [13, 14]. The 201 patients in the Eastbourne Syncope Assessment Study (EaSyiAS) [13] had a mean age of 74 years (range 64–81 years), while the 60 patients in the Randomised Assessment of Syncope Trial (RAST) [14] were 66 ± 14 years. In both studies, patients with unexplained syncope were randomised to ILR versus a conventional investigation strategy, with improved diagnostic rates seen with ILR use. In EaSyiAS, patients in the ILR group were seven times more likely to receive an ECG diagnosis (33 vs 4%, hazard ratio 8.93, 95% confidence interval 3.17–25.2, P < 0.0001) than those in the conventional group, while the RAST ILR group achieved a diagnosis in 55 versus 19% with conventional testing (P = 0.0014) [14].

Clinical experience with ILRs is not restricted to primary cardiac rhythm disturbance. The International Study on Syncope of Uncertain Etiology 2 (ISSUE 2) [4] included patients with a relatively high mean age (66 ± 14 years) though it was not restricted to older patients. Three hundred and ninety-two patients with suspected neurally mediated syncope had a
full syncope workup then underwent ILR implantation (Phase I). One hundred and three patients with recurrent syncope then entered Phase II of the study, with 53 of these patients receiving ILR-guided therapy (permanent pacing for asystole in 47, anti-tachycardia treatment in six). Syncope recurred in 10% of these patients over the subsequent year compared to 41% of the 50 who had no specific treatment [4]. ISSUE 2 thus supports the role of diagnostic ILR application in suspected neurally mediated syncope, and although the data are again observational, the high rate of ‘hard’ arrhythmic diagnoses goes some way towards negating this criticism. It does not, however, avoid the fundamental problem of basing routine and expensive clinical practice (approximately £1,200 per device) on an inadequate evidence base.

So where does this leave the practising geriatrician and his or her patients with syncope? There is a supportive but limited evidence base for the routine use of ILRs in syncope, particularly where arrhythmia is suspected, and although the mean age of participants in the only two randomised trials to date was >65 [13, 14], the evidence in the older population is hardly comprehensive. The initial ILR experience in older individuals was hampered by problems of device activation [5, 13], though this is less of an issue with advances in auto-activation [15] and remote monitoring. These technological innovations will aid the management of vulnerable subpopulations who were previously unlikely to be able to operate the activating devices, including those with cognitive impairment and dexterity problems. Should we be referring for the ILR early in the diagnostic pathway for older people? The jury is still out, though the logic (in terms of the high proportion cardiac causes of syncope in the older age groups) and early evidence base [4] suggest that sooner may be better. The need for prompt diagnosis and treatment of syncope in older people is well established; the optimal timing of ILR use in the syncope journey and the impact of its costs and benefits on the health economy is, however, less certain.

References