

# Cardiac pacing reduced nonaccidental falls in older adults with cardioinhibitory carotid sinus hypersensitivity

Kenny RA, Richardson DA, Steen N, et al. Carotid sinus syndrome: a modifiable risk factor for nonaccidental falls in older adults (SAFE PACE). *J Am Coll Cardiol*. 2001 Nov 1;38:1491-6.

## QUESTION

In older adults with cardioinhibitory carotid sinus hypersensitivity (CSH) presenting with a nonaccidental fall (defined as coming to rest on the ground or another lower level not because of an accident or known medical cause), does cardiac pacing reduce subsequent nonaccidental falls?

## DESIGN

Randomized (unclear allocation concealment\*), unblinded,\* controlled trial with 1-year follow-up.

## SETTING

A hospital in Newcastle upon Tyne, England, UK.

## PATIENTS

175 patients  $\geq 50$  years of age (mean age 73 y, 59% women) with cardioinhibitory CSH

who reported to the emergency department because of a nonaccidental fall. Exclusion criteria included cognitive impairment (Mini-Mental State Examination score  $< 24$ ), a medical cause for the fall within 10 days of presentation, an accidental fall, blindness, contraindication to carotid sinus massage (CSM), and use of drugs known to cause hypersensitivity to CSM. Follow-up was 91%.

## INTERVENTION

Patients were allocated to receive a rate-drop response physiologic dual-chamber pacemaker implant ( $n = 87$ ) or standard (non-pacing) treatment ( $n = 88$ ).

## MAIN OUTCOME MEASURES

Number of falls without loss of consciousness and episodes of syncope.

## MAIN RESULTS

Patients with pacemakers had fewer falls without loss of consciousness than did those in the control group (mean 4.1/y vs 9.3/y, odds ratio 0.42, 95% CI 0.23 to 0.75). The groups did not differ for episodes of syncope ( $P = 0.063$ ).

## CONCLUSION

In older adults presenting with a nonaccidental fall and cardioinhibitory carotid sinus hypersensitivity, cardiac pacing reduced subsequent nonaccidental falls.

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*For correspondence: Professor R.A. Kenny, Royal Victoria Infirmary, Newcastle upon Tyne, England, UK. E-mail r.a.kenny@ncl.ac.uk. ■*

\*See Glossary.

## COMMENTARY

In elderly persons, falls can lead to substantial morbidity and mortality (1). Furthermore, CSH is a frequent cardiovascular cause of syncope (2).

In this study by Kenny and colleagues, the incidence of falls in patients who received a pacemaker was reduced by 70%. Only those with a history of recurrent falls had a reduced incidence of syncope; overall, the groups did not differ for reduction in syncope.

Older adults who present with falls or syncope should be thoroughly evaluated. Studies have shown that the diagnostic yield of a comprehensive multidisciplinary assessment is high (3). This finding has profound medical, psychological, and economic importance. Cardiovascular causes remain the most common cause of syncope and signify a poor prognosis. Iatrogenic causes usually related to polypharmacy should be identified and rectified.

Although pacing is a simple intervention with a considerable beneficial effect in this patient population, only 16% of patients had a cardioinhibitory or mixed response that qualified them to receive a

permanent pacemaker. 80% of patients who had syncope during carotid sinus massage had amnesia, raising the possibility that syncope may be more prevalent in patients who present with falls.

In establishing the efficacy of cardiac pacing for falls related to CSH, this study points to the need to look for this disorder in elderly persons presenting with nonaccidental falls.

*Munther Homoud, MD  
Tufts University School of Medicine  
Boston, Massachusetts, USA*

## References

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