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EDITORIAL

Carotid sinus hypersensitivity in old age: clinical syndrome or physical sign?

Carotid sinus hypersensitivity (CSH) refers to the occurrence of clinically significant sinus pauses of >3 s (cardioinhibitory CSH) or a fall in resting systolic blood pressure of 50 mmHg or more (vasodepressor CSH) or both (mixed CSH) immediately following massage of the carotid sinus.

Essential equipment for demonstrating CSH includes a beat-by-beat measuring device, such as Finapres or Portapres, and a continuous electrocardiograph rhythm strip generator.

Syncope may be abolished in patients with cardioinhibitory CSH by insertion of a dual-chamber permanent cardiac pacing system [1]. Patients with vasodepressor CSH may be treated with lower-limb compression hosiery and various drugs that enhance vasoconstrictor responses, such as fludrocortisone, dihydroergotamine, ephedrine and midodrine. However, the clinical response to drug therapy is inconsistent [2].

CSH in fallers

The phenomenon of CSH in elderly patients who present with unexplained falls and syncope has been studied in great detail in recent years, most notably in the UK by Kenny and colleagues in Newcastle upon Tyne. Their work has shown that CSH is highly prevalent (with rates of up to 45%) in elderly people who present with unexplained falls and syncope [3]. Importantly, as many as 32% of patients with CSH and reproducible transient syncope have amnesia for the syncope [4], suggesting that syncopal falls are seriously under-reported.

In the current issue of *Age and Ageing*, Davies, Steen and Kenny report a CSH prevalence rate of 45% in a group of consecutive elderly non-accidental fallers presenting to a large accident and emergency department [5]. The prevalence rate of CSH in healthy controls was 13%. Syncope during carotid massage occurred in 27% of cases but in none of the controls. The authors conclude that elderly patients presenting to accident and emergency departments with unexplained falls should have haemodynamic assessment to detect CSH as a possible cause of the unexplained fall.

The published data from Newcastle have had a powerful influence on the practice of many geriatricians in relation to the investigation of syncope and unexplained falls in old people. There are, however, several difficulties in putting a diagnostic label of CSH on old people who fall inexplicably and have positive responses to carotid sinus stimulation.

First, most of the published reports of CSH in high proportions of elderly fallers have elicited CSH in an unblinded fashion (i.e. the investigator was aware of which subjects were fallers and which were controls).

Secondly, in these studies, CSH is elicited mostly by manual carotid massage, which is an unstandardized stimulus to the baroreceptor reflex pathway. Removal of the subjective and highly variable nature of carotid massage would be desirable. For example, stretch stimuli can be applied to the carotid sinus, using short intervals of graduated negative suction pressure. However, this method is more difficult technically and may not be tolerated by frailer elderly patients.

Thirdly, there is the issue of how to interpret the finding of a positive carotid sinus massage—in other words, whether CSH is a diagnostic label or a physical sign. There is strong circumstantial evidence that the latter may true, since CSH is commonly associated with old age, hypertension, and coronary artery disease [6]. The common underlying factor in such patients is arteriosclerotic disease. Age-related arteriosclerosis is associated with reduced baroreflex sensitivity [7], a fact that is difficult to reconcile with the presumed occurrence of spontaneous hypersensitive baroreflex responses of carotid sinus syndrome.

Finally, there are, as yet, no published large–scale randomized controlled trials that clearly show improvement in falls or syncope as a direct result of pacemaker insertion in patients with demonstrable cardioinhibitory CSH. A multicentre, large-scale, placebo-controlled trial of dual-chamber pacing in cardioinhibitory CSH is in progress to address this question (SAFE–PACE 2; C. Seifer, personal communication), but it will be some time before the trial is completed.

Interpretation of CSH and falls

CSH is a common and interesting phenomenon and undoubtedly may be elicited in a high proportion of elderly fallers. However, its precise causative relationship to falls in elderly people remains unclear.

There is a worry that eliciting CSH in fallers may result in it being interpreted in the minds of some as the sole cause of the falls. Recurrent falling in old age usually has a multi-factorial aetiology, requiring a multi-faceted

therapeutic and rehabilitative approach. Until the natural history and clinical relevance of CSH is better understood, the identification and management of the various other risk factors for falls should remain the focus of those who deal with this common clinical problem.

Denis O'Mahony
Department of Geriatric Medicine, Cork University Hospital, Wilton, Cork, Ireland
Fax: (+353) 21 922 317
Email: omahonyd@shb.ie

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