SEASONALITY OF BENIGN PAROXYSMAL POSITIONAL VERTIGO

Benign paroxysmal positional vertigo (BPPV) occurs when otoconia of the utricular macula become dislodged and freely floating otolithic debris moves into 1 or more of the semicircular canals (usually the posterior canal). This release of otoconia from the macula is most often idiopathic. However, it was recently found that in patients with BPPV, serum vitamin D levels are lower and prevalence of vitamin D deficiency is higher compared with controls. In addition, patients with BPPV have an abnormally high prevalence of osteoporosis, and BPPV recurrence is more common in those with osteoporosis compared with those with normal bone mineral density. Any analysis of a possible relationship between vitamin D deficiency and BPPV must account for the seasonality of serum vitamin D level. A previous investigation found that in Boston, Massachusetts, one’s serum vitamin D level falls during winter, reaching a low point each year in early spring (March-May). To explore for the possibility of a seasonality of BPPV, we assessed the number of BPPV visits seen at a hospital in Boston in March, April, and May and compared this with the number of visits during the remaining months of the year.

Methods | Institutional review board approval was obtained from the Massachusetts Eye and Ear Infirmary. From billing records at the Massachusetts Eye and Ear Infirmary (MEEI) in Boston, we identified charges for visits between January 1, 2009, and December 31, 2013, on which MEEI health care practitioners reported a first visit for BPPV, defined as billing by the practitioner for either Current Procedural Terminology code 95992 or International Classification of Diseases, Ninth Revision code 386.11. To avoid repeatedly counting treatments of 1 bout of BPPV, we included only the first occurrence of either of these codes. We defined pooled BPPV visits as the total number of BPPV visits for a particular calendar month, summing over the 5 years investigated. We defined average early spring BPPV visits (AES-BPPV) as the mean of pooled BPPV visits for March, April, and May. Average non–early spring BPPV visits (ANES-BPPV) was defined as the mean of pooled BPPV visits for the 9 months other than March, April, and May. In addition, we requested data on the total volume of otology and laryngology clinic and emergency department encounters for the period investigated. We defined pooled total visits as the total of otology and laryngology clinic and emergency department visits for a particular calendar month, summing over the 5 years investigated. We defined average early spring total visits (AES-Total) as the mean of pooled total visits for March, April, and May. Average non–early spring total visits (ANES-Total) was defined as the mean of pooled total visits for the 9 months other than March, April, and May. Statistical comparisons were made, using a 2-tailed t test, assuming unequal variances.

Results | There were 956 visits for BPPV during the 5 years, yielding an mean of 191 patients per year. All but 1 of these BPPV visits occurred either in the otology and laryngology clinic or in the emergency department. The AES-BPPV was 91.3 (SD 5.5). In contrast, ANES-BPPV was 75.8 (SD 8.4) (Figure). The difference between AES-BPPV and ANES-BPPV was statistically significant (P = .01). During the 5-year period investigated, the AES-Total was 24,525, and the ANES-Total was 22,819. This difference was not statistically significant (P = .05).

Discussion | The number of BPPV visits was greatest during the months when serum vitamin D level is lowest in Boston. Little is known about the effects of vitamin D on mineralization of otoconia. On the basis of the recently described association between vitamin D deficiency and BPPV, one could speculate that bone and otoconia share some risk factors for demineralization. An ongoing clinical trial is designed to determine whether treatment with cholecalciferol plus calcium prevents recurrent BPPV. The optimal design of such trials may need to account for both the well-known seasonality of serum vitamin D level in northern and southern latitudes, as well as a possible seasonality of BPPV. Limitations of our study include the fact that we retrospectively considered only the first instance of BPPV. Future investigations could prospectively analyze seasonality of BPPV recurrences in individuals.
In conclusion, the incidence of BPPV in Boston may be higher during the period between March and May, compared with other months. Further investigations of this phenomenon are needed to address whether recurrences of BPPV in individual patients exhibit a similar pattern and whether vitamin D deficiency is a risk factor for a seasonal form of BPPV.

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