

Might hypovitaminosis D aggravate endothelial dysfunction-related increases in arterial stiffness seen in patients with hypertension and type 2 diabetes?

B. J. Boucher

Received: 18 June 2012 / Accepted: 29 June 2012 / Published online: 4 September 2012
© Springer-Verlag 2012

Keywords Arterial stiffness · Diabetes · Endothelial dysfunction · Hypertension · Vitamin D

Abbreviation

25(OH)D 25-Hydroxyvitamin D

To the Editor: This letter comments on the article ‘Type 2 diabetes mellitus worsens arterial stiffness in hypertensive patients through endothelial dysfunction’ by Bruno et al [1].

The role of endothelial dysfunction in determining aortic stiffness in individuals with hypertension who also had type 2 diabetes, but not in people without diabetes, reported in this paper, provides a mechanism likely to contribute to the increases in incidence, and mortality from, cardiovascular disease—well known problems in those with type 2 diabetes, particularly since they also have a higher incidence of hypertension than do non-diabetic individuals. The identification of factors that might be able to reduce endothelial dysfunction is, therefore, of great potential practical importance, especially for those with both type 2 diabetes and hypertension. The association of endothelial dysfunction with arterial stiffness reported in these hypertensive diabetic patients was not accounted for by obesity, and thus some other factor remains to be identified. Review of the literature suggests that increased type 2 diabetes risk is associated with hypovitaminosis D [2], the latter being itself associated with vascular endothelial dysfunction [3]. Furthermore, several randomised controlled trials of vitamin D supplementation in those with marked vitamin D

deficiency have shown improvements in endothelial function, in younger rather than older people, independent of concomitant reductions in blood pressure; in some cases these have involved improvement in both endothelial markers of vascular dysfunction and in glycaemic status and lipid profiles [4, 5]. It would be of great interest, therefore, if the authors have measurements of vitamin D status (serum 25-hydroxyvitamin D [25(OH)D] concentration) available, or samples that could be assayed for 25(OH)D, to see what the inclusion of this variable in their analyses might show. This is an important issue since, if vitamin D status proves to be a predictor of vascular function in the cohort with type 2 diabetes and hypertension [1], then vitamin D supplementation would need to be examined in appropriate trials as a potential adjunctive treatment for such patients.

Duality of interest The author declares that there is no duality of interest associated with this manuscript.

Contribution statement The author is the sole contributor to this letter.

References

1. Bruno RM, Penno G, Daniele L et al (2012) Type 2 diabetes mellitus worsens arterial stiffness in hypertensive patients through endothelial dysfunction. *Diabetologia* 55:1847–1855
2. Boucher BJ (2011) Vitamin D insufficiency and diabetes risks. *Curr Drug Targets* 12:61–87
3. Tarcin O, Yavuz DG, Ozben B et al (2009) Effect of vitamin D deficiency and replacement on endothelial function in asymptomatic subjects. *J Clin Endocrinol Metab* 94:4023–4030
4. Shab-Bidar S, Neyestani TR, Djazayeri et al (2011) Regular consumption of vitamin D-fortified yoghurt drink (Doogh) improved endothelial biomarkers in subjects with type 2 diabetes: a randomized double-blind clinical trial. *BMC Med* 9:125
5. Sugden JA, Davies JI, Witham MD et al (2008) Vitamin D improves endothelial function in patients with type 2 diabetes mellitus and low vitamin D levels. *Diabet Med* 25:320–325

B. J. Boucher (✉)

Queen Mary University of London: Bart’s and The London School of Medicine and Dentistry, Centre for Diabetes and Metabolic Medicine, Blizard Institute,
4 Newark Street, Whitechapel,
London E1 2AT, UK
e-mail: bboucher@doctors.org.uk