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## Aortic calcification and abdominal aortic aneurysm expansion

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To the Editor:

We read with great interest the recent publication by Dr Lindholt<sup>1</sup>. In this study the severity of aortic calcification was inversely correlated with the growth rate of small abdominal aortic aneurysms (AAA). The author's finding fits with a recent study by our group demonstrating that AAA growth was reduced in diabetic patients<sup>2</sup>. *In vitro* studies suggested that cross-linkage of the extracellular matrix in diabetic patients' favoured de-activation of infiltrating monocytes, thereby inhibiting medial degradation<sup>2</sup>. It would be interesting to know if the association between calcification and AAA growth noted in the study by Dr Lindholt persisted after adjusting for diabetes. Dr Lindholt used assessment of aortic calcification measured on ultrasound as > or < 50% of an unspecified denominator. We have previously developed a technique to measure aortic calcification volume by a reproducible method on computed tomography angiography (CTA) (inter- and intra-observer coefficient of variation < 1%)<sup>3</sup>. This technique would be expected to be more objective than ultrasound measurements although to completely assess this both techniques would need to be repeated on the same patient cohort and compared. We have recently assessed the relationship between initial infrarenal aortic calcification volume and yearly increase in total aortic volume in a cohort of 32 patients with small AAAs (<50mm) who underwent repeat CTA a median of 18 months later. Using Spearman's correlations the initial total aortic volume ( $r=0.38$ ,  $p=0.03$ ) but not initial calcification volume ( $r=0.18$ ,  $p=0.33$ ) was related to aortic volume increase per year. This correlation between initial volume and volume increase is comparable to that between initial aortic diameter and diameter increase ( $r=0.32$ ) in a series of 829 patients with small AAAs we have been following by ultrasound surveillance for a median of 4 years. Median aortic volume increase per year was similar for patients with aortic calcification < or  $\geq$  median (see table 1). Larger studies are required to confirm our findings. We suggest the application of a reproducible protocol such as the one we have developed in future studies.

## References

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**Table 1**

Relationship between initial calcification volume and yearly increase in total aortic volume

Initial calcification volume	Median initial aortic volume cm <sup>3</sup> (IQR)	Median volume increase per year cm <sup>3</sup> (IQR)
less than median *	75.69 (58.36–97.20) †	4.71 (1.05–8.34) ‡
greater or equal to median *	66.37 (45.18–89.63) †	4.85 (0.97–10.19) ‡

\* Median infrarenal aortic calcification volume= 1041.15 mm<sup>3</sup>.

† Initial total aortic volumes were not statistically different (p=0.35).

‡ Increase in total aortic volume was not significantly different (p=0.68). IQR= Inter-quartile range. Statistical comparisons were made with Mann Whitney U test.