**PURPOSE**

Cardiovascular diseases (CVD) are the prevalent cause of death in Europe and the United States. This is despite general acceptance that a healthy lifestyle and risk factor management can prevent the development of CVD. Furthermore, two-thirds of women who die suddenly from CVD have no previously recognized symptoms. Thus, it is essential to find effective and broadly applicable indicators of cardiovascular risk that may prompt timely intervention.

Abdominal aortic calcifications (AAC) as observed by standard lumbar lateral radiographs can be predictors of cardiovascular mortality and correlate strongly with coronary artery calcifications. We investigated whether size, shape, and distribution of AACs related to mortality and how such prognostic markers performed compared to the state-of-the-art marker on lumbar lateral radiographs, AC24, introduced by Kauppila et al.

**METHOD AND MATERIALS**

For 308 post-menopausal women we quantified the number of abdominal aortic calcifications (AAC) and the percentage of the abdominal aorta that the lesions occupied in terms of their area, simulated area, thickness, wall coverage and length. We analysed inter-/intra-observer reproducibility and predictive ability of mortality after 8-9 years. This was done via a Cox regression with and without adjustment for biological risk factors leading to hazard ratios (HR).

**RESULTS**

The coefficient of variation was below 25% for all markers. The strongest individual predictors were the number of calcifications (HR=2.4, p<0.001) and the simulated area percentage (HR=2.96, p<0.001) of a calcified plaque and, unlike AC24 (HR=1.66, p<0.001), they allowed mortality prediction also after normalization for traditional risk factors. In a combined Cox regression model the strongest complementary predictors were the number of calcifications (HR=2.76, p<0.001) and the area percentage (HR=-3.84, p<0.001).

**CONCLUSION**

While AC24 definitely captures essential information about abdominal aortic calcifications (AAC), the results demonstrate that some of these novel markers may capture additional or complementary information. Therefore, the proposed radiographic AAC markers may allow improved screening and risk monitoring of CVD mortality.

**CLINICAL RELEVANCE/APPLICATION**

New imaging biomarkers based on shape, size and distribution of lumbar aortic calcifications as seen in lumbar lateral radiographs may allow improved screening and risk monitoring of CVD mortality.

**FIGURE (OPTIONAL)**

** no data entered **
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