

Epidemiology

Presence of Vulnerable Coronary Plaques in Middle-Aged Women Who Suffered Brain Death

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Background

The presence of vulnerable plaques is a common finding in the coronary arteries of previously asymptomatic men who died suddenly or due to an acute coronary syndrome. The prevalence and the characteristics of these plaques in middle-aged women are still unknown.

Objective

To evaluate the presence of vulnerable coronary plaques in middle-aged women who suffered brain death.

Material and Methods

From a total of 652 hearts from transplant donors collected between 1996 and 2007, we selected those from apparently healthy individuals older than 40 years old who died of head trauma or stroke. From a total of 160 eligible organs, the coronary arteries of 70 female hearts were examined by serial sectioning at 3-mm intervals. The areas with luminal narrowing were processed for subsequent histological and immunohistochemical studies. Plaques were classified according to the American Heart Association (AHA) report.

Results

Mean age was 50.7 ± 5.7 years. The degree of average vascular obstruction was $28.66\% \pm 17.35\%$. A total of 41 hearts had no advanced coronary atherosclerotic lesions (Type I, II, and III of the AHA classification). In the remaining 29 hearts we found 58 plaques considered high-risk lesions (AHA type IV, V and VI). These plaques were less frequent in women than in men ($p < 0.001$) and were associated with higher heart weight (OR 1.02, 95% CI 1.01-1.04; $p < 0.001$) and with age (OR 1.11, 95% CI 1.01-1.23; $p = 0.038$). No significant association with the cause of death was found ($p = 0.065$).

Conclusions

In 41.4% of women who suffered brain death, we found vulnerable plaques in the coronary arteries that were not associated with significant lumen obstructions. This series suggests the presence of 0.82 coronary lesions which are prone to develop thrombosis in apparently healthy middle-aged women who suffered brain death.