THE PROPORTION OF LIPIDS IN HUMAN CORONARY ATHEROSCLEROTIC PLAQUES IS INDEPENDENT OF PLAQUE SIZE OR BURDEN

Poster Contributions
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Background: The lipid content of an atherosclerotic lesion is important because it influences plaque vulnerability. Most previous pathological studies measured the amount of fat considering the “negative image” of lipids (empty spaces supposed to be filled by fat), instead of the positive staining which requires frozen histological sections.

Methods: We measured by morphometry in the same coronary samples both the positive lipid staining in frozen sections and, after standard histological procedures, the “negative image”, determining the relationships between them and with the amount or proportion of lipids and plaque size or burden. Ninety-four coronary artery segments from the hearts of 33 necropsy cases of patients who died with ischaemic heart disease were included. Pearson’s test was used to verify the correlations. Significance was established as p≤0.05.

Results: For the amount of fat, the correlation between measurements by the two methods was significant, but the coefficient was low (r=0.34, p<0.01); for its proportion, there was no significance (r=-0.02, p=0.86). There was a moderate correlation between positive areas for fat and intimal area (r=0.60, p<0.01), and a weak correlation between positive areas for fat and plaque burden (r=0.24, p=0.02). When the percentage of fat was examined, its relation with the intimal area remained significant but weak (r=0.26, p<0.01), and there was no correlation between the percentage of fat and plaque burden (r=0.08, p=0.46).

Conclusion: the standard histological method does not appear to be reliable for evaluating lipids in atherosclerotic plaques. Analysis of positive fat staining showed that its proportion does not vary according to plaque size or burden.