Expression of a metalloproteinase family of ADAMTS in human vulnerable carotid lesions.

ADAMTS family of metalloproteases (a disintegrin and metalloprotease with thrombospondin motifs) possesses high proteolytic activity especially regarding proteoglycans. Their expression pattern in carotid plaques is as-yet unknown. The aim of the study was therefore the analysis of expression of ADAMTS1, 4, 5, and 13 and their inhibitors TIMP-1 and TIMP-3 in stable and unstable carotid plaques. Atherosclerotic plaques were collected from 40 patients (29 men, 11 women, mean age 70 years) undergoing carotid endarterectomy. The specimens were categorized into two groups (stable/unstable) according to Redgrave und Rothwell (The Oxford Plaque Study, 2008). SYBR Green-based real-time PCR, histology, and immunohistochemistry were performed. All ADAMTS tested in our study were expressed in both stable and unstable plaques, especially in smooth muscle cells (SMCs) and macrophages. Analysis of the expression pattern on mRNA level showed significant higher expression of ADAMTS1 in unstable plaques compared with stable plaques (1.7-fold, \( P = 0.049 \)). The expression of ADAMTS4 and 5 was also increased in unstable lesions; however, these changes were not statistically significant (1.2-fold, \( P = 0.667 \) and 1.6-fold, \( P = 0.077 \)). Expression of TIMP-1 was significantly reduced in unstable plaques.
compared with stable ones (1.9-fold, P = 0.014). SMCs seem to be an important source of ADAMTS analyzed in our study. Furthermore, expression of ADAMTS1 was found to be increased in unstable carotid lesions and might potentially contribute to plaque vulnerability.