Expression of class I histone deacetylases (HDAC1 and HDAC2) in oesophageal adenocarcinomas: an immunohistochemical study.

Abstract:
BACKGROUND: Histone deacetylases (HDACs) are enzymes which play a central role in post-translational histone and non-histone protein modification. Deregulation of HDACs has been detected in various human malignancies and may also influence response to chemotherapy. AIMS: To investigate the expression of class I histone deacetylase (HDAC) isoforms 1 and 2 in oesophageal adenocarcinomas. METHODS: 132 primary resected tumours and 48 tumours treated by chemotherapy were analysed. Expression of HDAC1 and HDAC2 was determined by immunohistochemistry, applied on a tissue microarray and on pretherapeutic biopsies, and correlated with pathological features and prognosis. RESULTS: There was negative or low expression of HDAC1 in 54% of tumours, moderate expression in 41% and high expression in 5%. HDAC2 expression was negative or low in 30% of tumours, moderate in 47% and high in 21%. In primary resected tumours, high HDAC2 levels were associated with lymphatic tumour spread and lower tumour differentiation grade. HDAC1 levels were not associated with pT, pN category or tumour differentiation grade. For neoadjuvant treated tumours, there was only a trend for an association with high pretherapeutic HDAC2 expression and tumour regression after chemotherapy. Pretherapeutic HDAC1
levels were not associated with regression after chemotherapy. Survival analysis failed to show any
prognostic impact of HDAC1 or HDAC2 expression. CONCLUSIONS: High HDAC2 expression is
associated with aggressive tumour behaviour in oesophageal adenocarcinomas. No significant
prognostic value could be found with respect to overall survival or an association with response to
conventional chemotherapy for HDAC expression. Immunohistochemical determination of HDACs
may be useful for prediction of response to specific HDAC inhibitors.