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p53/MDM-2 immunohistochemical expression correlated with proliferative activity in different subtypes of human sarcomas: a ten-year follow-up study.

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Abstract

The aim of this study was the evaluation of p53/MDM-2 protein overexpression in different subtypes of human sarcomas, and their correlation with proliferative activity and patient outcome. We selected 40 cases of human sarcomas comprising 6 malignant fibrous histiocytomas (MFH), 1 fibrosarcoma, 1 dermatofibrosarcoma protuberans, 5 liposarcomas, 9 leiomyosarcomas, 1 rhabdomyosarcoma, 3 synovial sarcomas, 2 osteosarcomas, 1 chondrosarcoma, 4 Ewing's sarcomas, 2 Kaposi's sarcomas, 1 malignant haemangiopericytoma, 1 phylloides cystosarcoma, 1 neuroblastoma, 1 chordoma and 1 unclassified sarcoma. All the immunohistochemical markers, which had been used for the characterization of these sarcomas were re-examined. Additionally, the Streptavidin-Biotin peroxidase method was performed on paraffin sections using the monoclonal antibodies: anti-p53 antibody DO7, anti-MDM-2 antibody IF2 and anti-Ki-67 antibody MIB-1. According to our results, p53 protein nuclear expression was detected in 20% (8/40) of the tumours (1 fibrosarcoma, 2 liposarcomas, 1 leiomyosarcoma, 1 rhabdomyosarcoma, 2 Ewing's sarcomas and 1 unclassified sarcoma). MDM-2 nuclear staining was determined in 7.5% (3/40) of the cases (1 MFH and 2 liposarcomas). A high proliferative index was demonstrated in 27.5% (11/40) of the tumours (2 MFH, 4 leiomyosarcomas, 1 rhabdomyosarcoma, 1 osteosarcoma, 2 Ewing's sarcomas and 1 unclassified sarcoma). p53 overexpression was associated with high tumour grade ($p < 0.05$) and MIB-1 expression was correlated with reduced survival ($p < 0.05$), but p53 overexpression was not significantly associated with either MIB-1 score or with overall survival of the patients. In conclusion, from this limited and heterogeneous sample of cases, we suggest that the p53/MDM-2 pathway is involved in the tumourigenesis of several sarcoma subtypes, but it is unclear if the overexpression of these genes may become prognostic marker for patients affected with these highly aggressive tumours.