Examination of survivin expression in 50 chordoma specimens - a histological and in vitro study

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Introduction: Chordomas mainly arise along the axial skeleton and are characterized by their slow but destructive growth. Prognosis and quality of life are poor because treatment options are mainly limited to surgery and radiotherapy. Survivin (baculoviral IAP repeat-containing 5, BIRC5), a member of the apoptosis inhibitor protein family, functions as a key regulator of mitosis and programmed cell death, and is overexpressed in many tumor types. The aim of this study was to determine the role of survivin in chordomas.

Materials/Patients and methods: Survivin expression was investigated in 50 chordoma samples and three chordoma cell lines using immunohistochemistry. The intensity of immunostaining was evaluated in regard to the development of recurrences. The immunohistochemical results were correlated with clinical parameters like gender, age, tumor size and location and were performed in primary chordomas as well as in recurrent lesions. Furthermore, survivin knockdown experiments on chordoma cell lines were performed. Results: The resultant data from this study suggest that survivin plays a cell cycle-progressive role in chordomas. The survivin inhibitor YM155 decreased the growth behavior of chordoma cells dose- and time dependently. Transient knockdown of survivin led to a G2/M arrest, decreased proliferation, consistently induced an increase of polyploidy and morphological changes, and induced apoptosis.

Conclusion: Hence, regulation of survivin by YM155 is a promising new target for the development of new therapeutic drugs.

Keywords : chordoma, survivin, YM155, cell cycle
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