Role of survivin in the pathogenesis of papillary thyroid carcinoma

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Received July 6, 2015
Accepted October 11, 2015
Published November 24, 2015
DOI http://dx.doi.org/10.4238/2015.November.24.19

ABSTRACT. The purpose of this study was to assess the correlation between the survivin gene and the occurrence and pathogenesis of papillary thyroid carcinoma (PTC). Sixty patients with PTC and no preoperative chemotherapy were recruited for the study and 30 thyrophyma patients receiving operative treatment in Drum Tower Hospital (Nanjing, China) were included as the control group. The protein expression levels of survivin were assessed by immunoblotting and immunohistochemical analysis of tissues from both patient groups. For survivin gene knockdown experiments, two target sequences were selected based on the mRNA sequence of survivin and two pairs of siRNA interference sequences were designed and synthesized accordingly. The siRNAs were shown to be successfully transfected into SW579 carcinoma cells and the resulting survivin knockdown was assessed by RT-PCR and immunofluorescence. Survivin was shown by immunohistochemistry to be distributed in the cytoplasm of PTC and thyrophyma cells, with the signal being significantly stronger in PTC cells than in thyrophyma cells and statistical analysis of immunostaining data further showed survivin to be more highly expressed.
(P < 0.05) in the PTC tissue than in the thyrophyma tissue. Transfection of SW579 cells with siRNA was found to be effective in knocking down the expression levels of survivin: 87.3 and 76.2% knockdown was achieved with sh-Survivin-1 and sh-Survivin-2, respectively. The findings reported here show that survivin is highly expressed in PTC and may therefore play a role in the occurrence, lymph node metastasis, and clinical staging of PTC.

**Key words:** Survivin; Papillary thyroid carcinoma; Pathogenesis; Signaling pathway