

## **DERANGEMENT OF THE E-CADHERIN/CATENIN COMPLEX IS INVOLVED IN TRANSFORMATION OF DIFFERENTIATED TO ANAPLASTIC THYROID CARCINOMA**

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**Background:** Anaplastic thyroid cancer arises as a consequence of tumor progression, or transformation, from pre-existing differentiated thyroid cancer. E-cadherin is a calcium-dependent transmembrane glycoprotein which functions as a cell-cell adhesion molecule that has an intracellular domain which complexes with catenin proteins for function. The objective of this study was to evaluate the change in E-cadherin/beta catenin expression in the transformation of differentiated to anaplastic thyroid carcinoma.

**Methods:** Of 194 cases of anaplastic thyroid cancer diagnosed and treated in British Columbia Canada over a 20 year period (1984-2004) 32 cases (34%) had adequate tissue available for evaluation and 12 of these cases had associated foci of differentiated thyroid carcinoma. A tissue microarray was constructed from these 12 anaplastic thyroid tumors and their associated differentiated foci. Immunohistochemistry was utilized to evaluate expression of E-cadherin and beta catenin by these tumors.

**Results:** There was decreased expression of E-cadherin and beta catenin by the anaplastic tumors when compared to the differentiated thyroid tumors from which they evolved. The expression of E-cadherin and beta catenin was 92% and 67%, respectively, by the differentiated thyroid carcinoma and 17% and 50%, respectively, by the anaplastic tumors.

**Conclusions:** This report is the first to demonstrate derangement of the E-cadherin/catenin complex is involved in the transformation of differentiated to anaplastic thyroid carcinoma.