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### **Expression of C-kit in retinoblastoma: a potential therapeutic target**

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**Purpose:** C-kit is a transmembrane tyrosine kinase protein thought to play an important role in tumourigenesis. With the development of the compound Imatinib Mesylate that specifically inhibits tyrosine kinase receptors, C-kit has emerged as a potential therapeutic target. This study aims to determine the immunoexpression of C-kit in retinoblastoma and correlate this expression with histopathological prognostic features.

**Methods:** Eighty-four paraffin-embedded retinoblastomas were collected from the Henry C. Witelson Ocular Pathology Registry. The C-kit immunostaining was used according to the protocol provided by Ventana Medical System Inc. Arizona. Immunoreactivity was correlated with the presence or absence of invasion into the choroid and optic nerve; and the degree of tumour differentiation. Odds ratios were calculated to quantify differences in C-kit expression between tumours with different patterns of invasion and differentiation.

**Results:** Twenty-one (25%) slides were excluded from analysis due to the presence of extensive tissue necrosis or absence of sufficient optic nerve tissue for analysis. Overall, C-kit expression was identified in 33/63 (52.38%) specimens analysed. Two out of the 13 tumours (15.4%) without choroidal and/or optic nerve invasion were positive for C-kit. On the other, C-kit was seen in 31 (62%) of the 50 tumours with extra-retinal invasion ( $p < 0.01$ ). Twenty-six of 44 specimens with choroidal involvement (59.9%,  $p < 0.2$ ), and 20/29 with optic nerve involvement (68.96%) expressed immunoreactivity for C-kit ( $p < 0.02$ ). Fourteen of 25 specimens (56%) moderate or well differentiated and 19 of 38 (50%) undifferentiated specimens displayed positivity for C-kit ( $p > 0.5$ ).

**Conclusions:** More than half of retinoblastomas in this study expressed C-kit. The expression of C-kit strongly correlated with histopathological features of worse prognosis including optic nerve and choroidal invasion.