SKIN CANCER (OTHER THAN MELANOMA)

MELANOCYTE AND MELANOGENESIS FEATURES IN PIGMENTED AND NON-PIGMENTED VARIANTS OF BASAL CELL CARCINOMA

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INTRODUCTION: Basal cell carcinoma (BCC) is the most common cancer worldwide. Nodular BCC is the most frequent histopathologic subtype. Pigmented variants are common in darker skin types. Previous studies have shown an increase number and size of melanocytes. Melanogenesis was also increased at the expense of hyperfunctioning melanocytes.

OBJECTIVE: To describe the characteristics of melanocytes in pigmented and non-pigmented variants of BCC, and to quantify the expression of main markers of melanocytic maturation and melanogenesis.

METHODS: We included 30 patients (≥40 years) with nodular BCC (15 pigmented; 15 non-pigmented), located to head and neck, measuring from 1 to 3 cm. Predominant skin type was IV (60%) in both variants. The mean duration of disease was 6 and 2.6 years (pigmented, non-pigmented respectively). We used histological, histochemical, immunohistochemistry, transmission electron microscopy and qRT-PCR techniques to evaluate the presence of SOX9, SOX10, FAK125, c-KIT, MC1R, MITF and TYR in pigmented and non-pigmented variants.

RESULTS: Pigmented BCC showed an increased number of melanocytes and melanin (p=<0.05). Electronic microscopy demonstrated not only an increased number of melanocytes, but also they were larger, and dendrites were also increased in number and diameter. We observed great amount of melanosomes in different stages of maturation, and increased melanin within and outside basaloid cells. Genetic and immunohistochemical analyses revealed a significantly increased expression of key melanogenesis markers (p=<0.05) in the pigmented variant. Regarding the maturation stage of melanocytes we found that non-pigmented BCC showed an increased expression of melanoblast markers, and significant decreased in c-KIT expression.

CONCLUSION: Together, these data suggest that pigmented BCC has a population of functional melanocytes capable of producing pigment; however in non-pigmented variants

melanocytes are immature, and could explain an accelerated growth compared with pigmented variants. Therefore, the clinical presence of pigment in nodular BCC could predict a less aggressive behavior.