HAIR DISORDERS

# MELANOGENESIS MARKERS EXPRESSION IN PREMATURE GRAYING OF HAIR- A CROSS-SECTIONAL STUDY

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Introduction: Hair is said to gray prematurely, if graying occurs before the age of 20yrs in whites, 25 yrs in Asians and before 30 in Africans. The pigment loss is due to a marked reduction in melanogenically active melanocytes in the hair bulb of anagen follicles. Some studies have demonstrated that ectopic pigmentation in the bulge (due to defective melanocyte stem cell maintenance) precedes loss of differentiated melanocytes in the hair matrix in physiologic graying.

Objective: We compared the mRNA expression levels of melanogenesis markers in upper segment (permanant)(US) and lower segment (temporary portion) (LS) of pigmented and white hairs in patients of premature graying.

Materials and Methods: Twenty- five consecutive premature graying cases attending the dermatology OPD were recruited. Five white and five pigmented anagen hairs were obtained per patient by taking 1 mm punch biopsies and separating the individual follicles. The hairs were dissected at a distance of 2 mm from the bulb, separating them into two segments. RNA was extracted from hair segments and expression of GP100, TYR(Tyrosinase), TYRP1(Tyrosinase related protein 1) genes was quantitatively analyzed using Qiagen one-step RT-PCR kit.

Results: A varied expression of the genes was found. A high TYR and GP100 mRNA expression was found in white US compared to the black US and white LS in 12 and 16 patients respectively. Analysis of the difference in mean fold change of gene expression showed a significantly higher expression of GP100 in white US when compared with that in white LS($p<0.001$) and black US(P-0.009). The mean fold change of TYR gene was also higher in white US than LS, though not statistically significant (p-0.062).

Conclusion: Further studies on expression pattern of these genes at protein level and, their functional activity are warranted for a better understanding of the pathogenesis of premature graying.