Subject: Brain-derived nerve factor & neurotrophins in androgenetic alopeci
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Brain-derived nerve factor and neurotrophins in androgenetic alopecia.
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Source

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Abstract

Background: Several growth factors and cytokines have been shown to be involved in normal hair cycling as well as in androgenetic alopecia (AGA). However, the molecular cascades in AGA downstream from androgen receptor activation are far from being fully elucidated. Objectives: We sought to determine the difference in the protein expression of growth factors/cytokines in balding vs. nonbalding scalp specimens from the same individuals affected with AGA. Methods: Balding and nonbalding scalp specimens were collected from 4 men with pattern baldness. Dermal papilla (DP) cells were isolated and cultured. Quantifying the protein expressions of growth factors and cytokines expressed by these cells was performed using Quantibody® Human Growth Factor Array-1. Results: Brain-derived nerve factor (BDNF) protein expression was upregulated by approximately 12-fold in supernatants obtained from balding as compared to nonbalding DP cells ($P < 0.001$). Expressions of neurotrophin-3 and ?-nerve growth factor were also upregulated. On the other hand, protein expressions of insulin-like growth factor (IGF)-1 and its binding proteins as well as those of the vascular endothelial growth factor (VEGF) family were significantly downregulated in the balding scalp. Conclusions: Neurotrophic factors, especially BDNF, may be important in mediating the effects of androgens on hair follicles, serving as a negative regulatory control signal. Further studies may lead to novel pharmacologic interventions in AGA.