

## Alopecia Universalis Hair Regrowth with Hormones

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### Abstract

Alopecia areata (AA) is a chronic, immune-mediated, non-scarring alopecia that causes patches of hair loss, typically on the scalp and face. Alopecia universalis (AU) is a severe form of AA that involves complete hair loss on the scalp and body. Although the genetics and immune pathogenesis have been recently better described, the exact cause and effective therapies remain unclear. We describe a case of a man with long-standing AU that regrew hair after supplementation with testosterone, chorionic gonadotropin (hCG) and DHEA-S.

**Keywords:** Alopecia; Alopecia areata; Alopecia universalis

### Introduction

Alopecia areata (AA) is a T-cell mediated autoimmune disease of hair follicles characterized by sudden, recurrent, and psychologically devastating hair loss [1-3]. The lifetime risk is approximately 2% [4]. There is no treatment for AA that induces and sustains remission [5]. The role of hormones in AA is unclear with no studies in current literature.

### Case Report

A 39-year-old man presented to our dermatology department with a 24-year history of alopecia universalis (AU), because he was suddenly experiencing hair regrowth without any targeted treatment.



**Figure 1:** Patchy hair regrowth on the patient's head after 2 months of treatment with nutritional and hormonal supplements.

Five months prior, he visited a naturopathic physician for evaluation of fatigue and lethargy. Laboratory tests indicated low-normal testosterone (325 ng/dL, normal 250-1100 ng/dL) and DHEA (152 mcg/dL, normal 106-464 mcg/dL), and increased estradiol (51 pg/mL, normal <29 pg/mL). He was started on chorionic gonadotropin (hCG) 8000 units/day, testosterone enanthate 1000 mg/day, and DHEA 25 mg/day.

Two months later, he noticed hair growth for the first time in 24 years. Initially, fine vellus hairs and then darker terminal hairs on his occipital and frontal scalp, bilateral dorsal forearms, central chest, and upper back.

On exam, he was a healthy appearing man with patchy regrowth of dark brown, terminal hairs and diffuse vellus hair on scalp (SALT 50) along with patchy regrowth of light and dark brown hair on face, trunk and extremities (Figures 1 and 2).



**Figure 2:** Hair regrowth on patient's abdomen and chest after 2 months of treatment with nutritional and hormonal supplements.

### Discussion

The role of hormones in the pathogenesis of AA has not been clearly elucidated [6]. This patient with AU regrew hair after supplementation

with DHEA-S, hCG and testosterone, intended to improve his fatigue. Hormones of the hypothalamic-pituitary-adrenal (HPA) axis, like DHEA-S, have significant immunomodulating activity, and abnormalities in DHEA-S have been implicated in AA [7]. As our patient's DHEA levels were low, supplementation may have positively affected AU.

No direct association has been described between AA and abnormalities in testosterone, estrogen or hCG. Chemically, hCG is similar to luteinizing hormone (LH) as it stimulates testosterone production. In a study of familial hypogonadism with alopecia, hCG supplementation led to increased testosterone, and induction of facial, axillary, and pubic hair growth [8]. Testosterone therapy also can increase hair growth in androgen-sensitive places [9]. The role of the low estrogen in AU in this man can be interpreted similarly, as estrogen is a steroid hormone with biphasic dose effects on immune response [10].

This case poses a question for the role of hormones and hormonal supplements in immune driven alopecia, and it warrants further research. It cannot be delineated which supplement specifically contributed to his hair regrowth, or if this was synergistic effect. Given that autoimmune diseases are influenced by genetics and environment, it may be prudent to evaluate hormonal status in symptomatic patients.

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