

Alopecia and the Aging Male

H Kamel

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Abstract

Hair loss may have devastating psychological and social effects at any age in both men and women. Scalp hair can be a source of pride or trauma at any age. The most common form of hair loss in men is called androgenetic alopecia. About 20% of Caucasian males at the age of 20 years show signs of androgenetic alopecia. The incidence increase by 10% every decade thereafter.¹ This article reviews the clinical presentation, Pathophysiology, diagnosis and treatment of androgenetic alopecia.

ANDROGENETIC ALOPECIA: CLINICAL PRESENTATION

Hair loss in androgenetic alopecia often affects the frontal, temporal, and parietal regions of the scalp.² The etiology of this condition involves the interaction of genetic and hormonal influences that result in changes in follicular architecture and alterations of hair growth cycle. There is shortening in the anagen or growing phase which ordinarily extends for about three years down to months or even weeks thus shortening the length to which the hair grows. The telogen or resting phase remains stable at three months but the latency between the telogen and new anagen phase increases. There is also a reduction in the volume of the matrix cells which reduces the caliber of the hair shaft.³

ANDROGENETIC ALOPECIA: PATHOPHYSIOLOGY

Facial, pubic, axillary and body hair follicles are influenced by androgens. Under the influence of testosterone, pubic and axillary hair transforms from vellus to terminal hair. Facial and body hair growth, on the other hand, is under the influence of dihydrotestosterone.⁴ Dihydrotestosterone is formed from testosterone by the type II 5 reductase enzyme. Dihydrotestosterone has the opposite effect on scalp hair in genetically predisposed men and acts to convert terminal hairs to vellus-like hairs. Eyebrow hair and eyelash growth is not under the influence of androgens.⁵

ANDROGENETIC ALOPECIA: DIAGNOSIS

The diagnosis of androgenetic alopecia is often made clinically by examining the entire scalp, noting the Hamilton-Norwood pattern of hair loss over the vertex.^{6,7} Physicians should, however, look for signs of patchy hair

loss, inflammation or evidence of scarring which may signal a different etiology for hair loss.

ANDROGENETIC ALOPECIA: TREATMENT

Currently available therapies for androgenetic alopecia include topical minoxidil, oral finasteride and hair transplant. Topical minoxidil has been gaining much popularity recently. Minoxidil was first formulated as an oral antihypertensive agent that acts as an arterial vasodilator via opening potassium channels in vascular smooth muscle. The interest in minoxidil as a treatment for androgenetic alopecia was the result of the work of Uno and colleagues on the stump-tailed macaque monkey, an animal model for androgenetic alopecia. They demonstrated that minoxidil both grossly and microscopically enlarged vellus follicles to the size of mid-sized and terminal follicles.⁸ The earlier the treatment was instituted the better were the results. They further showed that minoxidil enhanced DNA synthesis in follicular but not epidermal keratinocyte and caused proliferation and differentiation of the matrix cells in the hair bulb.⁹ The mechanism of action of minoxidil on hair follicles is not yet clearly understood. Two-percent minoxidil has been available for a number of years for the treatment of men with androgenetic alopecia.¹⁰ A 5% topical solution of minoxidil was granted FDA approval in 1997 and is currently available over the counter. The efficacy of topical minoxidil has not been evaluated in males over the age of 50 years.

Finasteride is a type II 5- α reductase inhibitor. In one randomized controlled trial, 1 mg of finasteride administered orally every day for 24 months resulted in an increase or maintenance of hair counts from baseline in 83% of men aged 18 to 41 years while 72% of men taking placebo

showed a decrease in hair counts.¹¹ Finasteride was approved by the FDA in the U.S. in early 1998 for the treatment of men aged 18-41 years with androgenetic alopecia. The effect of finasteride in older men with this condition is currently being evaluated. It is worth noting that studies on older men treated with finasteride for benign prostatic hypertrophy showed a 50% decline in serum PSA levels. This should be taken into consideration while interpreting PSA results on men receiving this medication. Finasteride, however, does not mask the detection of prostate cancer.¹² Finasteride reduces serum dihydrotestosterone by 71% and scalp dihydrotestosterone by 65%.¹³

The results of hair transplantation have been improving dramatically lately as surgeons performing the procedure became more skillful and hair transplantation methods became more refined. In this procedure, hair follicles are harvested from the occipital region of the scalp and subsequently redistributed over the vertex or frontal hairline. Hair transplantation can be combined with the use of oral finasteride or topical minoxidil to augment hair density.

A number of epidemiological studies linked androgenetic alopecia to increased risk for ischemic heart disease.^{14,15,16,17} The most notable among these was the study conducted by Ford and colleagues¹⁵ in which they followed a cohort of 2932 men with different degrees of androgenetic alopecia for 14 years. This study showed a positive correlation between severe degrees of baldness and the development of ischemic heart disease and mortality in men who were under the age of 55 at baseline. More recently, an Australian group of investigators reported a possible association between androgenetic alopecia and the development of prostate cancer.¹⁸

CORRESPONDENCE TO

Hosam K. Kamel, MD Director of Geriatric and Extended Care St. Joseph's Mercy Health Center 1635 Higdon Ferry Road Hot Springs, AR 71913 (501) 6221273 phone (501) 6222068 fax kamel@pol.net

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Author Information

Hosam K. Kamel, MD, FACP, AGSF

Director, Clinical Assistant Professor, Geriatrics and Extended Care, Department of Geriatrics, St. Joseph's Mercy Health Center, University of Arkansas for Medical Science