Reversal of Andro-genetic Alopecia in a Male

A Spironolactone Effect?

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This 73-year-old white male has been bald since the age of 28. He developed nonA–nonB-induced liver cirrhosis and had been treated with spironolactone for the last 6 years. For the last 3 months, his hair had started to regrow over the scalp. This might be related to the antiandrogenic effect of spironolactone. ***Key word: Cirrhosis.***

(Accepted January 19, 1990.)

Acta Derm Venereol (Stockh) 1990; 70: 342–343.

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Common baldness (andro-genetic alopecia) results from the combination of adequate androgen levels and the appropriate genetic background; both of which are pre-requisite for that clinical manifestation. Recent reports claim some success by using spironolactone for the treatment of andro-genetic alopecia in women (1). Moreover, spironolactone has been repeatedly shown to act as an anti-androgen (2–3) and is used to treat female hirsutism (4). We report here a first case of reversal of andro-genetic alopecia in a male receiving spironolactone for cirrhosis.

CASE REPORT

A 73-year-old white male developed andro-genetic alopecia type VII (according to the Hamilton classification of hair loss) (5) at the age of 28. He was diagnosed as having cirrhosis by liver biopsy at 67 years of age, secondary to nonA–nonB hepatitis. He also had multiple esophageal variceal bleeding and abdominal ascites that were treated with sclerotherapy and spironolactone 100 mg p.o. three times a day respectively since the diagnosis.

The patient has noted a regrowth of his vertex scalp hair over the last 3 months (Fig. 1). He did not apply any kind of local therapy nor did he change his usual scalp hygiene. The patient did complain of some hair loss over the back but did not note any difference over his chest hair or rate of growth of his facial hair.

His other medical problems include hypertension, hypothyroidism and diabetes mellitus. His present medications include: L-thyroxine, furosemide, verapamil, insulin and spironolactone. His physical examination was relevant for terminal hair growth over the scalp, no spider angiomas, no palmar erythema, normal chest hair, no ascites, spleen tip palpable and testicular atrophy. A hormonal work-up revealed a testosterone: 302 mg/dl (Nl > 280). Free testosterone: 62 picog/ml (Nl 50–210). Dihydrotestosterone (DHT): 100 ng/dl (Nl 25–75). Prolactin: 18.0 pg/ml (Nl 3.0–14.7). DHEAS < 5 μg/ml (Nl 170–670). Estradiol: 18 pg/ml (Nl 10–50). FSH: 5 IU/l (Nl 2–20). LH: 24 IU/l (Nl 2.0–20.0).

DISCUSSION

Andro-genetic alopecia is a disease affecting a good portion of the male and some of the female population. Its exact cause and mechanism(s) are unknown, but autosomal dominant inheritance with variable penetrance and the presence of androgen are essential for its manifestation. Spontaneous reversal of baldness has not been reported, thus this might be the first reported case of spontaneous reversal or could be related to cirrhosis or drug-induced hormonal effects. The latter has to do either with a decrease in androgen, an increase in estrogen, or an anti-androgenic effect. A feminization syndrome due to hypothalamic-pituitary-gonadal dysfunction in men with liver disease is seen mainly with alcohol-induced (but not viral-induced) cirrhosis (6). These are usually due to reduced concentrations of free testosterone and increased levels of estrogen, neither of which is present in our patient.

Spironolactone on the other hand, has been well documented to act as an anti-androgen and its mechanisms of action have been discussed (2–3). First, it blocks the biosynthesis of testosterone at the 17-hydroxylase stage. This did not seem to be of significance in our patient, since the total testosterone was well within normal limits. Second, the effect of spironolactone on 5_{α}-reductase activity is variable and controversial (7) but does not play any role in our

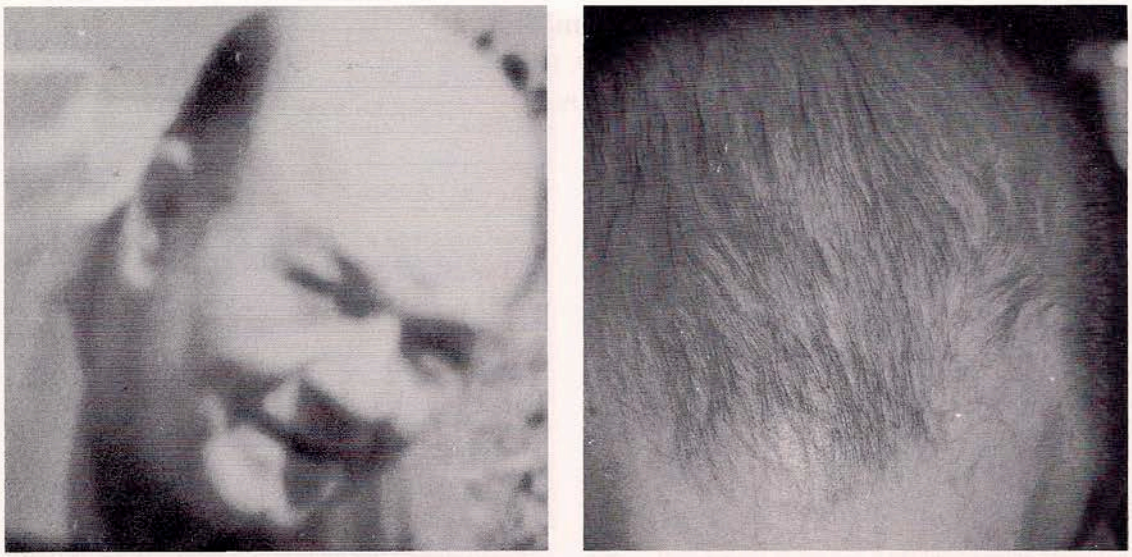

Fig. 1. (A) Two years before the growth of hair. (B) Three months after.

patient, since the concentration of DHT is increased rather than decreased. Thirdly and more important, spironolactone has been shown to competitively inhibit the interaction between dihydro-testosterone and its cytoplasmic receptor protein.

This is in part the presumed explanation for the anti-androgenic actions and side effects of this drug and is a plausible contributing factor for the reversal of alopecia in our patient, since the levels of testosterone, DHT and estradiol all fall within the normal range for age. The reasons why this occurred after 6 years of therapy with spironolactone remain speculative and might be related either to a delayed effect, delayed response of the hair follicles, or some kind of preferential drug effect depending on the hair follicle cycle.

Oral spironolactone has been used to treat female hirsutism (4) as well as female andro-genetic alopecia (1). A topical cream has been used for moderate idiopathic hirsutism (8) and as a percutaneous treatment for acne (9). To our knowledge, no trial of topical spironolactone has been performed for andro-genetic alopecia in males.

In summary, this is a case of reversal of androgenetic alopecia in a male, probably related in some way to the anti-androgenic effect of spironolactone.

ACKNOWLEDGMENT

The authors would like to thank Mrs Lana Johnston for secreterial assistance.

REFERENCES

1. Kasick J, Bergfeld W, Steck W, Gupta M. Andrenal androgenic female-pattern alopecia: sex hormones and the balding woman. Cleve Clin Q 1983; 50: 111–122.
2. Youg R, Goldzieher J, Elkind-Hirsch K. The endocrine effects of spironolactone used as an anti-androgen. Fertil Steril 1987; 48: 223–228.
3. Loriaux L, Menard R, Taylor A, Pita J, Santen R. Spironolactone and endocrine dysfunction. Ann Inter Med 1976: 85: 630–636.
4. Shapiro G, Evron S. A novel use of spironolactone: treatment of hirsutism. J Clin Endocrinol Metab 1980; 51: 429–432.
5. Hamilton JB. Pattened long hair in man: types and incidence. Ann NY Acad Sci 1951; 563: 708–728.
6. Van Thiel D, Gavaler J, Spero J, et al. Patterns of hypothalamic-pituitary-gonadal dysfunction in men with liver disease due to differing etiologies. Hepatology 1981; 1: 39–46.
7. Corvol P, Michaud A, Menard J, Freifeld M, Mahoudeau J. Anti-androgenic effect of spironolactone: mechanism of action. Endocrinol 1975; 97: 52–58.
8. Nielsen P. Treatment of moderate idiopathic hirsutism with a cream containing Canrenone (an antiandrogen). Dermatologica 1982; 165: 636–639.
9. Menissa M, Manieri C, Rizzi G, Molinatti GM. A new therapeutic approach to acne: an antiandrogen percutaneous treatment with spironolactone. Current Therapeutic Research 1983; 34: 319–324.