

INTRODUCTION

From adolescence till the end of life, although hair density at the scalp keeps reducing, it reduces more prominently in the frontal and temporal region. The hair growth cycle is divided into three phases: the anagen phase (growth, 85% of the hair, duration of 3 years), the catagen phase (1 % of the hair, duration of 3 weeks) and the telogen phase (resting and hair fall, 14 % of the hair, duration of 3 months). The hair follicles are the only organs in the human body to renew themselves cyclically and asynchronously. Androgenic alopecia (AGA) is the most frequent cause of alopecia in men or women, 70 to 80 % of men and up than 40 % for women after the age of 45.

ANDROGENIC ALOPECIA: ETIOLOGICAL APPROACH

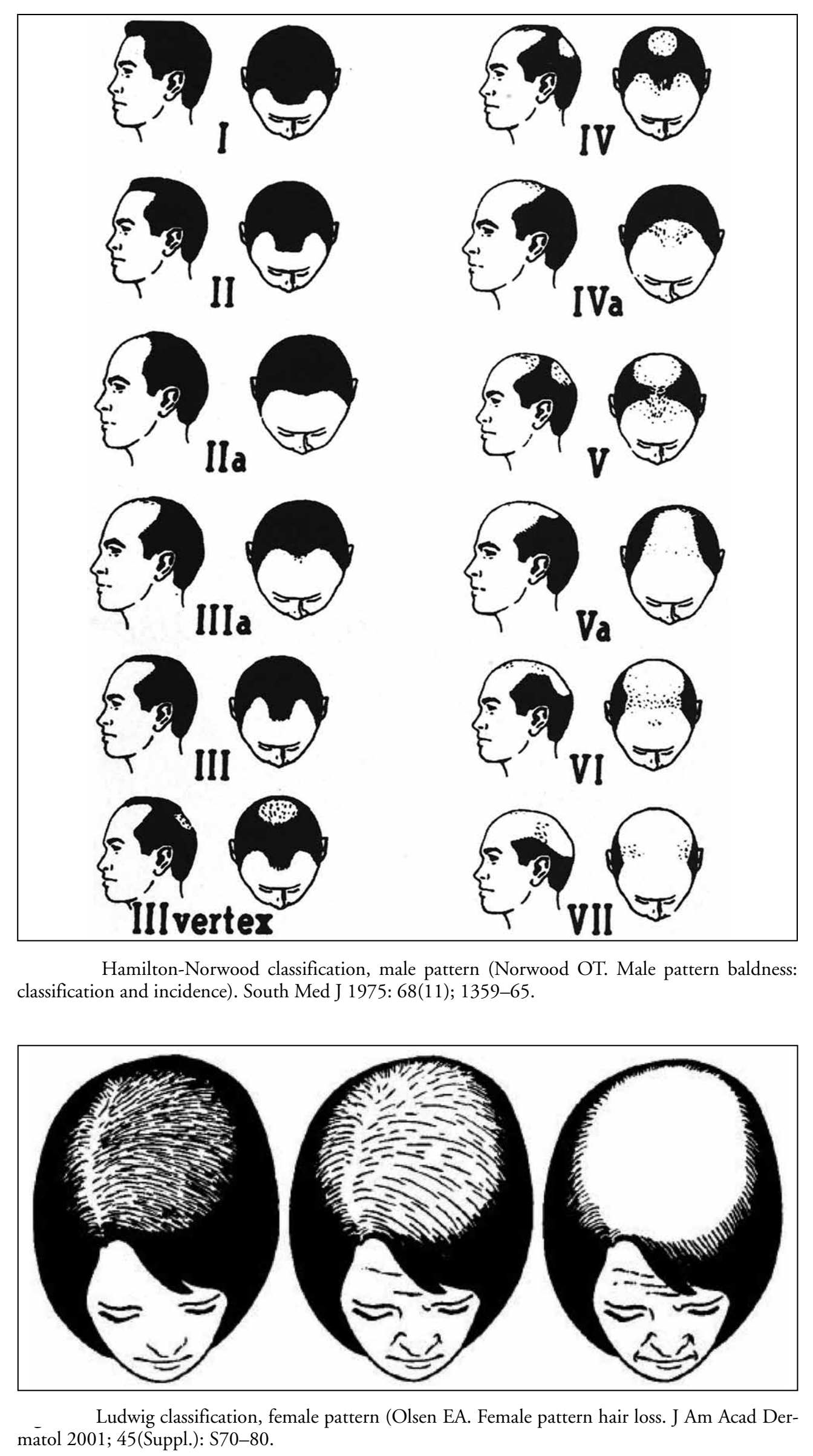
The androgen receptor gene situated on the X chromosome is one of the genes susceptible to androgenic alopecia; the genes situated on chromosome 20 (recently identified as 20p11) would have a prognostic value . With respect to men, there is an increase of the 5-alpha reductase activity, resulting in a local increase in dihydrotestosterone (DHT). This would inhibit cellular proliferation at the level of the dermal papilla as well as the local production of the VEGF (Vascular Endothelial Growth Factor). In AGA this local increase of the DHT is associated with a greater sensitivity of the receptor to this hormone conditioned by the genetic factor. When it comes to women, the origin is not definitively known. The oestrogens have a positive effect on this diffuse alopecia, probably due to different mechanisms: anti-androgen effect, effect of increase in the VEGF, proliferative effect on the dermal papilla. The frontal and vertex alopecia sometimes seen in older women is less common than a physiological hypoandrogenism associated with a diffused loss.

Like the skin, hair also goes through an ageing process, the main two causes of which include intrinsic factors (genetic) and extrinsic factors (environmental): oxidative stress, sun rays (UVA and B), tobacco, emotional stress, water and humidity, cosmetics, etc. Ageing of hair results in reduction of the duration of the hair growth phase, decrease in the diameter of the hair shaft, decreased elasticity and graying. These changes are secondary to the apoptosis phenomena and deterioration of the differentiation process, pigmentary system and vascularisation. Oxidative stress is triggered by several factors like UV rays, certain medicines, pollutants, tobacco, emotional stress, and induce inflammation of the skin , perifollicular inflammation and fibrosis.

MESOTHERAPY WITH NCTF® 135 HA: THERAPEUTIC APPROACH

Our experience tells us that mesotherapy is a potent therapeutic weapon against AGA in men and women when functional hair follicles are still present. For men the most frequently used classification is that of Hamilton which classifies alopecia into stages I to VII, in which stage III is the most commonly accepted as the real alopecia stage. For women the Ludwig classification is used . Mesotherapy seems to be more effective than the IV or IM injections containing traditional substances. The substances traditionally used in France in mesotherapy are Bepanthen®, biotine, polyvitamins. As the results were quite deceptive at times and the extrinsic etiological factors of alopecia were those of the ageing of the skin, it seemed logical to have an anti-age approach and to use NCTF® 135 HA (Laboratoires FILORGA). The objective is to prevent the catagen phase and extend the anagen phase by using cytoprotective molecules and anti-oxidants.

NCTF® 135 HA, a CE approved polyrevitalising solution, medical device, containing 53 active ingredients and free hyaluronic acid with a molecular weight of 1 million Daltons, of a concentration of 5 mg/ml. It also comprises 12 vitamins, vitamin C in particular, B vitamins (B8: biotin, B5: pantothenic acid, B9: folic acid, B1, B2, B3: nicotinamide, B6, B7, B12), vitamins A and E. The formula contains a strong antioxidant, the glutathione witch plays a vital role in preventing oxidative stress on the hair follicles.



INNOVATIVE TECHNIQUES AND PROTOCOLS IN PREVENTION AND TREATMENT OF HAIR LOSS

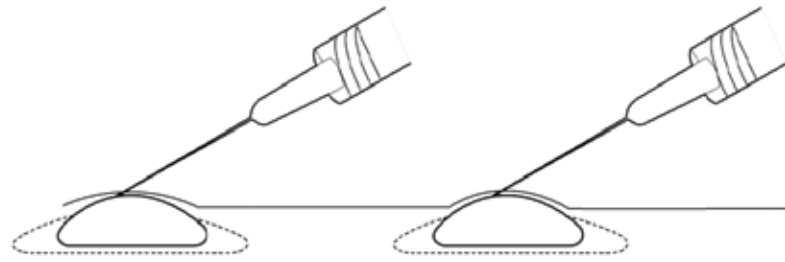
Beilin G. Aesthetic physician - Paris – France
Boisnic S. Dermatologist, GREDECO, Paris - France

PILOT STUDY 1 / MESOTHERAPY ASSOCIATION WITH THE NCTF® 135 HA AND LEDS

INJECTION TECHNIQUES

2 injection techniques – manual or using a gun :

- Micro-droplets through micro-punctures (papules) that are about 4 mm apart in a very superficial manner.
- Using a gun can be effective for the first few mesotherapy sessions when the scalp is sclerotic and not very vascularised. It allows us to inject with a pressure that is higher than the pressure used for manual injections.



MESOTHERAPY PROTOCOL

After carefully disinfecting the scalp, the frontal, temple and if required vertex areas must be uniformly treated. A second round of injections must be carried out on the frontal edges and the temple hair lines. The injections with used NCTF® 135 HA, 1 vial of 3 ml per session, 30G needles fixed on a Luer-Lock syringe. 3 to 4 sessions with a 15-day interval for the first 2 months followed by 1 session per month for 3 months. In practice, we continued the treatment based on monthly sessions.



LEDS PROTOCOL

Wave length is 590 nm for the yellow and 625 nm for the red, 12 J/cm2 for the yellow and 14 J/cm2 for the red (MLS device). 10 minutes LED treatment after the mesotherapy session (Mac Daniel protocol). For the first 3 months: 35 seconds of pulsed red followed by 5 minutes of continuous red this is followed by another 35 seconds of pulsed red and 5 minutes of continuous red. From the 4th month during the regrowth of hair : 35 seconds of pulsed yellow followed by 5 minutes of continuous yellow, 25 seconds of red and 5 minutes of continuous red.



PATIENTS INCLUDED

10 patients included: 5 men and 5 women. All of them had already consulted dermatologists or undergone surgery for treating their alopecia. Among the 5 men, two were suffering from AGA in stage III and IV. The 3 other male patients were suffering from AGA that was resistant to local treatments. All of them had consulted a surgeon and considered hair transplants. Two men, aged 39 and 45 had already undergone their first hair transplant. The 5 women were menopausal without any hormone replacement therapy, aged between 55 and 65; 2 of them had considered a hair transplant and 3 were complaining about strong social embarrassment.

RESULTS

For the 10 patients : Fast stop of the hair loss in 1 month after 1 to 2 sessions. A visible regrowth from the 3rd session in 2 months and a progressive increase, with every session, in the density and volume of hair and an improvement in the quality: more shiny, more glossy and re-pigmented. 8 of 10 patients wanted to continue treatment at a frequency of one session per month. Evaluation of the satisfaction: For the 10 patients treated the satisfaction score is 5 (very satisfied) for both the patients and doctor. All the requests for a hair transplant were abandoned.

For a hair transplant patient for 4 months with very slow regrowth of the grafts (stagnation), 6 sessions in 6 months have accelerated hair growth. The 2nd transplant patient who underwent a transplant 2 years earlier, also observed a marked increase in the quality and density of hair.

PATIENT NO. 6: 1ST MESOTHERAPY AND LED SESSION ON 05/12/2011



3rd treatment session
05/19/2011



13th treatment session
07/17/2012

VISIBLE REGROWTH IN THE TEMPLE AREA AND HAIR QUALITY IMPROVEMENT.

PATIENT NO. 1: 1ST MESOTHERAPY AND LED SESSION ON 11/09/2010



5th treatment session
01/03/2011



7th treatment session
01/19/2011



11th treatment session
06/03/2011

AT THE 7th TREATMENT REGROWTH CLEARLY VISIBLE, MARKED IMPROVEMENT IN THE QUALITY OF HAIR AND REPIGMENTATION (OBSERVED FROM THE 6th SESSION)

AT THE 11th TREATMENT CONTINUATION OF THE REGROWTH AND IMPROVEMENT IN THE QUALITY OF HAIR (SHINY AND RE-PIGMENTED)

PILOT STUDY 2 / TRANSDERMAL APPLICATION (ROLLER) OF THE NCTF® 135 HA TECHNIQUES

The sessions were carried out using a Roller to enhance penetration of NCTF® 135 HA, a sterile medical device comprising a cylindrical head with 540 fine needles, 0.5 mm long.

TREATMENT PROTOCOL

- Disinfecting the scalp using chlorhexidine before every session .
- The NCTF® 135 HA solution is applied to the surface of the scalp. The roller is then used at a low pressure in multi-directional movements (6 times over each treated area).
- This treatment was primarily not only for the alopecia areas but also for the rest of the scalp.
- 1 mesotherapy session every 15 days for 3 months, followed by 1 session a month for 5 months , total of 11 sessions.



PATIENTS INCLUDED

5 subjects, above 30 years of age, of which 2 subjects had a simple recession of hair in the temple area and 3 had AGA. The subjects were selected according to the Hamilton-Norwood classification.

PATIENT NO. 5: D0



PATIENT NO. 3: D0



AFTER 6 MESO ROLLER SESSIONS



RESULTS

In total, 5 men from the age of 31 to 67 (average 50 years ± 14.6) were included in the test with grades from I to V according to the Hamilton-Norwood classification. The evaluation was carried-out after 11 mesotherapy sessions. For subjects (no. 1 and 2) showing a change in the implantation of the scalp of intermediate grade between I and III according to the Hamilton-Norwood classification, an improvement in hair growth on the scalp after mesotherapy is noticed mainly around the temple area. The hair density is the most significant at this level. For subjects suffering from type V AGA (subjects 3, 4 and 5) an increase in hair regrowth was observed in the alopecia areas (for subject no. 3, results after only 6 sessions and for subject no. 5, results after only 6 sessions also). The tolerance of all the subjects was excellent.

CONCLUSION

The general ageing approach applies to all the tissues. In androgenic alopecia, the NCTF® 135HA injections (classic mesotherapy technique or Meso Roller) combined or not with LEDs help us act on all the parameters of ageing, oxidative stress, nutritional deficiencies, cellular metabolism and angiogenesis. The results of those 2 pilot studies are convincing with stoppage of hair loss, hair regrowth and re-pigmentation of the hair when there are functional bulbs and melanocytes. Those 2 techniques and protocols have helped achieve a preventive effect by limiting hair fall in the case of subjects with receding hairlines in the temple area, and stimulating hair regrowth on the androgenetic alopecia areas. The protocol NCTF® 135HA injections combined with LEDs undoubtedly has major benefits combined with hair transplants and the first results are very encouraging.