Pearls and Pitfalls in the treatment of hair loss in women

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Chicago Summer AAD
Disclosures

• Consultant/Investigator for:
  • Aclaris
  • Samumed
  • Incyte
  • Applied Biology
  • Biologics MD
  • Replicel Life Sciences Inc.
  • RegenLab
  • Bioniz
Non-scarring alopecia

CONTINUING MEDICAL EDUCATION

Evaluation and diagnosis of the hair loss patient
Part I. History and clinical examination
Thamer Mubki, MD,1 Lidia Rudnicka, MD, PhD,2,3 Malgorzata Olszewska, MD, PhD,4 and Jerry Shapiro, MD5,6
Riyadh, Saudi Arabia; Warsaw, Poland; Vancouver, British Columbia, Canada; and New York, New York

Evaluation and diagnosis of the hair loss patient
Part II. Trichoscopic and laboratory evaluations
Thamer Mubki, MD,1 Lidia Rudnicka, MD, PhD,2,3 Malgorzata Olszewska, MD, PhD,4 and Jerry Shapiro, MD5,6
Riyadh, Saudi Arabia; Warsaw, Poland; Vancouver, British Columbia, Canada; and New York, New York
Androgenetic Alopecia (AGA):

- Most common form of alopecia in men and women

- Anagen phase ↓
- Proportion of telogens ↑
- Thinner and finer hair ↑
- Time between shedding and regrowth ↑
- More scalp visible + Vellus like hair
Androgenetic Alopecia (AGA):

- Female pattern hair loss:
  - 38% of women are affected by this condition; leading diagnose in hair clinics.
  - The severity is not age related.
Androgenetic Alopecia (AGA):

- **Female pattern hair loss:**
  - It is classically divided into 3 stages, although can be presented with frontotemporal recession and as male pattern;
  - Christmas tree pattern is the most common presentation.

![Ludwig Classification of Hair Loss in Women](image)
Androgenetic Alopecia (AGA):
Trichoscopy: diagnose, hair density and caliber

Folliscope

Fotofinder
Androgenetic Alopecia (AGA):

Diagnosis

- **Laboratory tests:** TSH, ferritin, vitamin D and zinc
- **Workup for androgens:** women with irregular periods and/or other signs of androgen excess – free and total testosterone, DHEA-S, 17-OH-progesterone
Androgenetic Alopecia (AGA):

**Treatment**

- **Minoxidil 5%**: 25 drops = 1mL 1-2x/day for at least 6h
  - **First option for all patients!**
  - Side effects: contact dermatitis, itching, erythema, facial hypertrichosis in 7%; tachycardia (less than 1 in a 1000)
  - 1/3 experience increased shedding in the first 6 weeks
Androgenetic Alopecia (AGA):

Treatment

- **Finasteride**: 2.5 mg/day
- **Dutasteride**: 0.5 mg/day

*Off-label use*

*Women who are or potentially may be pregnant should avoid*
Androgenetic Alopecia (AGA):

Treatment

- **Spironolactone**: 100mg twice daily;
  - May reduce shedding but has low effect on hair regrowth;
  - Requires laboratory exams every 3 months;
  - Main side effect is menstrual irregularities (may be corrected with decreasing the dose and adding oral contraceptive)

*Contraindications*: renal insufficiency, hyperkalemia, pregnancy, genetic predisposition for breast cancer and abnormal uterine bleeding.
Oral Contraceptives

Physicians and patients choosing OCPs should be aware of hormonal sequelae related to hair loss.

Negative or low androgen indexes may protect against developing AGA.

OCPs containing high doses of norethindrone and norgestrel, respectively, are least likely to inhibit pattern hair loss and may promote AGA.
Excellent

Drospirenone
Cyproterone acetate
Very Good:

Norgestimate, Desogesterol, Norethindrone acetate
Good

Levonorgesterol
BAD

Norgesterol and Norethindrone
AGA treatments

• Biotin:

The only conditions scientifically proven to be benefited with biotin supplementation are trichorrhexis nodosa and alopecia induced by the use of valproic acid or excessive ingestion of raw egg whites.
AGA treatments

- **Oral Minoxidil:**
  
  - Once daily low-dose oral minoxidil (0.25mg) in combination with spironolactone 25mg in the treatment of 100 women with Sinclair stage 2-5 FPHL
  
  - Most women noticed a reduction in hair shedding at 3 months and an increase in hair density at 6 months.
  
  - **HOW DO I USE?**
    
    - Minoxidil 0.625mg once daily for patients that can’t use topical solution/foam

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Pharmacology and therapeutics

Female pattern hair loss: a pilot study investigating combination therapy with low-dose oral minoxidil and spironolactone

Rodney D. Sinclair¹,², MBBS, MD, FACP
Platelet Rich Plasma (PRP)

Cell-based therapy

Concentrated suspension of autologous platelets

1980’s: Orthopedic use for bone

2000’s: Skin rejuvenation

• “Vampire Facial”: PRP with microneedling

2010’s: Hair restoration
PRP: growth factors

- PRP
- PDGF a-b
- FGF
- EGF
- IGF-1
- VEGF
- CTGF
- TGF alfa-beta
PRP clinical trial NYU

- Clinicaltrials.gov
- Double blinded placebo controlled study
- 50 men and women
- Split scalp PRP vs Saline
- Externally funded by Regenlab from Lausanne, Switzerland
- Co Investigator: Kristen Lo Sicco, Kumar Sukhdeo and Anthony Ho
Platelet-Rich Plasma (PRP) Treatment Protocol

Month 0
Assessment
PRP Treatment

Month 1
Assessment
PRP Treatment

Month 2
Assessment

3/4/5/6 Month
Repeat assessment
PRP Treatment

No further PRP
Continue other
treatments

+ Response
+10 hairs/cm²

No Response
-10 hairs/cm²
Combination Therapy Achieves Quantitative Increases in Hair Density

All patients (N=24)

- Start count: 155 hair/cm²
- End count: 179 hairs/cm²
- Mean Δ: +24 hairs/cm² (P=0.022)

Responders (N=17)

- Start count: 163 hair/cm²
- End count: 198 hairs/cm²
- Mean Δ: +35 hairs/cm² (P<0.0001)

Non-Responders (N=7)

- Start count: 135 hair/cm²
- End count: 133 hairs/cm²
- Mean Δ: -2 hairs/cm² (Not significant)

Average Age:
- Responders: 44
- Non-Responders: 37

No significant change in hair diameter Month 0 Month 6
Trichologic Responses are Time-Dependent

- Segregation of responders vs non-responders after 2 months
- Most benefit achieved within 2 to 4 months
- No shock loss

![Graph showing change in hair density over time for responders and non-responders. Responders (N=17) and non-responders (N=7) are differentiated by color and trend lines. The graph includes a threshold for +10 hairs/cm² and a timeline from Month 0 to Month 4.](image-url)
Take Home Points

Can I use PRP with other treatments?

• No apparent downside to use PRP as combination therapy

What are the chances of it working?

• Nearly 3 out of 4 recipients of combination therapy show increased hair density

How much benefit can I expect?

• Average increase: +35 hairs/cm². No change in hair diameter.

Which people do worse with therapy?

• Patients with earlier-onset disease and lower baseline hair counts don’t respond as well

When will I see benefit?

• Usual response at 2-4 months, but may increase or decrease
When NOT to use PRP: presence of skin cancer on the head

BCC on the scalp
Microneedling Clinical Trial at NYU

- Split scalp; one side MN
- Both sides receive Minoxidil 5% foam bid
- Single blinded study
- Hair counts and diameters
- Treatment every 2 weeks for 20 weeks
Microneedling (MN)

Mechanisms of action:

• Neo-angiogenesis, growth factor production

• Breach of stratum corneum allows for more effective drug delivery
Skin Pen II

Automated vibrating cartridge, stamp-like and fractionated

Variable length needles, set for 1.5 mm in our study

FDA registered as medical device

Bellus Medical SkinPen®
Microneedling half head study
Microneedling

- Subjects were randomly allocated into 3 groups
  - Topical 5% minoxidil (group 1, n = 20),
  - Electrodynamic microneedle treatment (group 2, n = 20),
  - Electrodynamic microneedle treatment with topical 5% minoxidil (group 3, n = 20).
- Patients received microneedle treatments every 2 weeks, for a total of 12 times.
- The best therapeutic effect was observed in group 3: non-vellus and the total hair counts, the hair thickness, investigator assessment, and patient self-assessment
  - 80% of these patients showed greater than 50% improvement of hair growth
Androgenetic Alopecia

- < 20% scalp involvement
  - 5% minoxidil solution/foam
  - Consider Finasteride 2.5mg QD or Spironolactone 50mg BID
  - Improvement
  - Review 6 monthly

- 20-50% scalp involvement
  - 5% minoxidil solution/foam
  - Improvement
  - Review 6 monthly

- 51-90% scalp involvement
  - 5% minoxidil solution/foam with:
    - Finasteride 2.5mg QD +/-
    - Spironolactone 50mg BID
    - *PRP
  - No improvement after 6 months
  - Increase the dose of Finasteride to 5mg QD or Spironolactone to 100mg BID
    - Dutasteride 0.5mg QD in post-menopausal women
    - *PRP
    - Improvement
    - Review 6 monthly

- ≥ 91% scalp involvement
  - Hair transplantation
  - 5% minoxidil solution/foam
  - Finasteride 2.5mg QD
  - Spironolactone 100mg BID
  - Dutasteride 0.5mg QD in post-menopausal women
  - *PRP
  - Cosmetic products
  - Cranial prosthesis

*PRP: platelet rich plasma
Thank you