UPDATE ON FEMALE PATTERN HAIR LOSS

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No relevant conflict of interest to report

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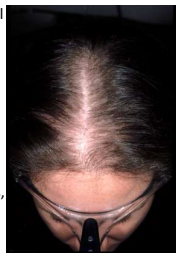
FEMALE PATTERN HAIR LOSS

- Diagnosis is key to successful treatment and is a clinical one with biopsy rarely needed
- Key features include:
  - Miniaturization of hairs in a mosaic pattern in affected scalp—no large bald areas, finer hairs
  - Shorter anagen phase—vellus like hairs
  - Longer time in resting state: telogen plus kenogen (lag phase) -longer than 4 months
- Even though typically responds to antiandrogen agents, phenotype may first appear when androgens low (menopause) or in the absence of androgen receptor
- *Now presence of FPHL is a specific criterium for PCOS



Olsen EA: J Am Acad Dermatol 45(3 Suppl): S70-S80, 2001
*Carmina E, et al. J Clin Endocrinol Metabol 104;2875-2891;2019

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FEMALE PATTERN HAIR LOSS: PHYSICAL EXAM

Patterns (3)*
- Frontal accentuation (*Christmas tree pattern*)* in ~70% of patients with obvious hair loss
- Centrifugal loss: *Ludwig pattern*
- *Male pattern* should trigger consideration excess androgens

Important absence of:
- Eyebrow loss
- Recession anterior hairline
- Global shedding
- Patches of hair loss

Olsen EA Olsen JAAD 1999;40:106-109
Olsen EA: J Am Acad Dermatol 45(3 Suppl): S70-S80, 2001
Olsen EA: J Am Acad Dermatol 48:253-62, 2003.

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FEMALE PATTERN HAIR LOSS: PHYSICAL EXAM

- Compare part width central scalp to occiput –will be wider
- Hair pull: may be + central scalp but if global, consider CTE
- Preservation of follicular ostia
- Absence of perifollicular erythema
- Dermatoscopic clues:
  - Peripilar sign
  - Variation in hair diameter
  - More single hair follicular units
  - Yellow dots

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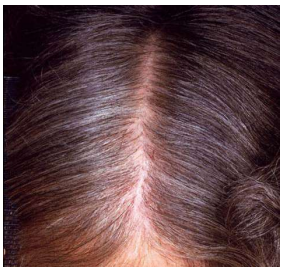
FEMALE PATTERN HAIR LOSS: PHYSICAL EXAM

Physical exam:
- Focal Atrichia* --pencil eraser sized areas (~4 mm diameter) of total hair loss
  - A distinguishing feature for FPHL, especially late onset FPHL (75% with focal atrichia)
  - Seen occasionally in CCCA and FFA



*Olsen and Whiting. JAAD 2017.09.064 (Epub ahead of print)

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FEMALE PATTERN HAIR LOSS: BIOPSY

- Biopsy rarely necessary for diagnosis
- Standard procedure:
  - In area of hair loss but not in area of increased shedding (avoid CTE)
  - 4 mm punch biopsy
  - Horizontal sections
- Findings:
  - Close to normal hair density/4 mm punch: ~36 in Caucasians, 22 in African Americans, 18 in Asians
  - Miniaturization of follicles: ratio terminal/vellus hairs of <4:1 vs normal 7:1
  - Increased % of telogen hairs (Nl 10%)
  - Perifollicular lymphocytic infiltrate is common without clinical inflammation

**Whiting D. Derm Therapy 1998:8:24-33; Sperling LC. Arch Dermatol 1999;135:656-658.*

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FEMALE PATTERN HAIR LOSS: DIFFERENTIAL DIAGNOSIS VS CCCA

- FPHL most common type of hair loss in African American women (~30%)* but underreported
- CCCA less common (~5%)* but involves same area of the scalp as FPHL
- Biopsy in an area of active hair loss is recommended in all African American women with central hair loss

Histological findings CCCA:

- Typical lymphocytic perivascular and perifollicular infiltrate , sebaceous gland loss and severe concentric lamellar fibrosis.

*Olsen EA et al. Central hair loss in African American women: Incidence and potential risk factors. JAAD 2011;64:245-252.

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FEMALE PATTERN HAIR LOSS: DIFFERENTIAL DIAGNOSIS VS CHRONIC TELOGEN EFFLUVIUM

- History of increase in global shedding
- +/-bitemporal recession in both FPHL and CTE
- Narrow part width central scalp
- Positive hair pull (Defined*as >5 per any pull or 15 total from 3-5 areas of the scalp): all telogen hairs
- If biopsy is done, do in occiput and request horizontal sections: A/T ratio of <4:1 (vs Nl 9:1) and T/V ratio of ≥7:1 (vs FPHL <4:1)

Whiting JAAD 1996;35:899-906

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FEMALE PATTERN HAIR LOSS: DIFFERENTIAL DIAGNOSIS

Frontal Fibrosing Alopecia

Key features:
- Recession of frontal and parietal hair lines +/- "lonely hairs"
- Loss of eyebrows
- Perifollicular erythema/papules
- Prominent veins in forehead
- LPP on biopsy

Kossard Arch Dermatol 130:770-774:1994

Fibrosing Alopecia in A Pattern Distribution

Key features:
- Clinical: perifollicular erythema +/- papules diffusely across central scalp –may progress to Ludwig III/ Sinclair V
- May see overlap with FFA
- LPP on biopsy

Zinkernagel and Trueb Arch Dermatol 136:205-211,2000

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FEMALE PATTERN HAIR LOSS

My basic screening lab work

- Possibly related to etiology/prognosis:
  - Total and Free Testosterone
  - Additional androgen screening (DHEA, 17-OH progesterone) and insulin resistance screening (2 hr GGT plus insulin levels)
    - If history suggests hyperandrogenism (hirsutism, infertility, irregular periods, cystic acne)
    - Teenage onset
- Not related to etiology FPHL but to confirm no factors that might negatively effect hair growth
  - Iron/TIBC (2-3 days off of iron supplements) and ferritin
  - Thyroid function tests
  - Vitamin D (off supplements)

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TREATMENT OF FPHL: TOPICAL MINOXIDIL

- Patient education is key to compliance and efficacy
  - Safe and most effective to apply either the 5% foam (TMF) or 5% solution (TMS) twice a day
  - 5% TMS will make fine thin hair look oily or flattened
  - 5% TMF should be applied directly to the scalp, not in palm first
  - Shedding the first month is normal and signifies the growth process has begun
  - If treatment is stopped, hair growth will only return to baseline, not go on to baldness

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Oral Minoxidil

- Dose for HTN (Loniten) is usually 10-40 mg per day
- 90% absorbed orally, metabolized by liver, excreted by kidney
- ½ life is 4 hrs
- Common hemodynamic/renal effects:
  - Decrease in systolic BP : dilatation arteriole smooth muscle. Effect on BP 30-60 min, max 2-4 hours, can last for days: drug retained by vascular smooth muscle
  - Increase heart rate and cardiac contractility
  - Transient EKG effects—flattening or inversion T waves
  - Peripheral edema/ worsening CHF: increase in renin→ sodium and water retention
  - To counteract these when treating HTN, usually prescribed in conjunction with a beta blocker and a diuretic (think spironolactone for FPHL)
- Rare: pericardial effusion

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USE OF ORAL MINOXIDIL IN FPHL

- Cardiac related AEs unlikely in normotensives but patients should be screened for risk factors: HTN, renal disease, cardiac arrhythmias and told of potential side effects
- Use lowest dose possible at initiation: smallest pill dose available 2.5 mg; <1 mg requires compounding or score 2.5 mg tablet
- If peripheral edema develops, consider spironolactone for control edema and antiandrogen effect.
- Discuss and prepare to treat hypertrichosis:
  - Worse on pinna, hairline, temples, above eyebrows, >extremities.
  - Treatment with laser hair removal, depilatories, shaving
- Be aware that facial coarsening may occur

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5 ALFA REDUCTASE INHIBITORS#

Estrogen <----aromatase-----Testosterone -----5 alfa reductase ----> DHT		
	Finasteride	Dutasteride
5-alfa reductase inhibitor	Type II	Type I and II
% decrease serum DHT	~70%*	>90%
% increase testosterone*	10.4%	23.8%
Half-life	20 hours	5 weeks
Serum concentrations DHT 36 weeks post DC drug*	All return to BL	-11.3 median change from BL

Data from MPHL studies

Olsen et al JAAD 2006;55:1014-1023
Makridakis N. J Mol Endocrinol 2005:34:617-623

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5 ALFA REDUCTASE INHIBITORS IN WOMEN WITH HAIR LOSS: MY RECOMMENDATIONS

- For premenopausal women,
  - Finasteride preferred as initial treatment: 1-5 mg/day with OCP
  - Avoid dutasteride due to long half life, risk of feminization male fetus
- For postmenopausal women:
  - Finasteride 1-5 mg per day or dutasteride. Usual dosing regimen I prescribe for dutasteride is 0.5 mg daily x 2 weeks then weekly
- Check serum estradiol pre and post therapy: can increase estradiol.
  - Duke study (submitted for publication): 7/40 (low level increase)
  - Unopposed elevated estradiol long term risk re breast cancer and if intact uterus, endometrial hyperplasia, increased uterine stripe and vaginal bleeding.
  - Do not use in women with breast cancer due to potential increase in estrogen

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ORAL ANTIANDROGENS

	Spironolactone	Flutamide
Decreases androgen production	Yes	Yes
Inhibits androgen/androgen receptor binding	Yes	Yes
Weak progestational effect	Yes	
Anti-gonadotropic		Yes
Feminization male fetus	Yes	Yes
Main side effect	Hyperkalemia	Liver toxicity
Dosage	100-200 mg/ day	250 mg bid/tid

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ADJUVANTS IN THE TREATMENT OF PATTERN HAIR LOSS

- Ketoconazole lotion: 2/6 open label study with "remarkable" regrowth (J Dermatol Sci 2007)
- Anti-seborrheic shampoos:
  - Zinc pyrithione and 2 % KCZ shampoo: increase in hair shaft diameter and % anagen and decrease in hair shedding even in the absence of seborrhea (Int J Cosmet Sci 2002:24:249-256).
  - 2% KCZ shampoo vs unmedicated shampoo: increase hair counts vs no change (Dermatology 1998;196:474-7)

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FEMALE PATTERN HAIR LOSS: LOW LEVEL LASER THERAPY

- FDA approved devices include laser combs, bands, hats and "helmets"
- Wavelengths 635-655 nm
- Dosing/fluence varies between devices
- Randomized, sham controlled clinical trials
- Target area hair counts primary endpoint
- Direct to consumer marketing/purchases: cost varies from $200-$2000

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CONCLUSIONS

- There are multiple effective medical treatments for FPHL
- 5% topical minoxidil remains the most effective topical agent –education of the patient necessary for compliance and efficacy
- Oral minoxidil ≤1 mg per day appears to be a well accepted and safe treatment for FPHL. Patients should be forewarned about potential hemodynamic effects, peripheral edema and generalized hypertrichosis—patients with HTN are at greater risk of AEs
- Dutasteride has greater effects than finasteride on hair growth but should be avoided in premenopausal women. 5 alfa reductase inhibitors should be avoided in women with hx of breast cancer and estradiol levels monitored in postmenopausal women with intact uterus
- Combination treatment is always more effective than single agent alone.

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