Efficacy of Platelet-Rich Plasma (PRP) Injections vs Topical Minoxidil in Adults with Androgenic Alopecia

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Abstract
- Androgenetic alopecia is a condition mediated by androgen (specifically DHT) and genetic factors causing hair loss and thinning of the scalp in men and women.
- Topical minoxidil (Regaine) is the most commonly used medication for AGA that stops hair loss and helps regrowth. However, it can cause an allergic reaction and its efficacy relies on the patient's compliance.
- Platelet-rich plasma injections for AGA is becoming more widespread as a safe, non-allergic alternative with little to no side effects.

Introduction
- Androgenetic alopecia is the most common form of alopecia, affecting up to 50% of women and 80% of men during their lifetime.
- Women are affected the most following menopause.
- >50% of men over 50 have some degree of hair loss which increases in severity with age.
- While considered a cosmetic concern, hair loss can pose a significant threat to a person’s emotional and psychological wellbeing as well as their overall quality of life.
- Currently there is no cure and there are only two FDA approved treatment options:
  - Minoxidil is believed to stimulate hair growth by shortening the telogen phase of the hair cycle and prolonging the anagen phase.
  - Finasteride treats AGA by regulating/inhibiting the production of an enzyme specific to a racial or ethnic group; 3) Studies that included patients with alopecia other than AGA such as alopecia areata, totalis, universalis, etc.
- Inclusion criteria: 1) Studies that included both men and women; 2) Studies that compared PRP and minoxidil as monotherapies rather than PRP as an adjuvant therapy.

Methods
- A literature search was performed in September 2019 via Google Scholar and Pubmed using the terms "PRP" AND "minoxidil" AND "androgenetic alopecia." The search was limited to articles published since 2015.
- Exclusion criteria: 1) Studies that included use of finasteride; 2) Studies that were specific to a racial or ethnic group; 3) Studies that included patients with alopecia other than AGA such as alopecia areata, totalis, universalis, etc.
- Inclusion criteria: 1) Studies that included both men and women; 2) Studies that compared PRP and minoxidil as monotherapies rather than PRP as an adjuvant therapy.

Results
- 3 studies directly compared PRP monotherapy to topical minoxidil monotherapy:
  - Direct comparison; statistically significant
- 2 studies compared topical minoxidil in conjunction with PRP to topical minoxidil monotherapy:
  - Indirect comparison; statistically significant
- 1 study compared PRP with microneedling to topical minoxidil with microneedling:
  - Direct comparison; statistically insignificant
- Limitations:
  - Each study had varying methods of PRP preparation and injection methods (volume of blood drawn, type of anticoagulant and activator, minimum platelet count, injection depth & technique).
  - Short duration of studies (studies ranged from 4 months to 18 months);
  - Women had a duration of >6 months.
  - Small sample size (sample sizes ranged from 10 to 374; 4 studies had a sample size of 50 or greater).
  - Lack of gender diversity (3 studies had an all-male population; 2 studies had an all-female population; only 1 study included both men and women).
  - Irreproducible global photography (lighting, angle and hair parting of progress photos differed from baseline photos).

Discussion
- Due to its autologous nature, PRP circumvents the side effects associated with current FDA approved medications (minoxidil and finasteride).
- PRP is a much easier treatment plan to adhere to; injections are once monthly and are administered by a physician, PA or NP.
- Further research:
  - More studies are required to ascertain the optimal preparation and injection methods.
  - Longer duration required to assess long-term progress.
  - Larger sample sizes for more accurate data.
  - Greater gender diversity as AGA affects women too.
- PRP is a safe alternative to topical minoxidil for the treatment of AGA in adults, but may not be suitable for everyone.

Conclusions

References