

Extended Abstract

The new idea for controlled
release PRP therapy in women
hair-loss

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Abstract

Recently, Platelet Rich Plasma (PRP) topical injection therapy is reported to be efficient for women hair loss but its effect is still not enough. And also the patients may fall into anemia because of repeated drawing blood. The mechanism of PRP is to provide growth factors around the cell and up-regulate cell function so they have to continue signaling to maintain cell function. Therefore concept of controlled release carrier is focused by engineers and researchers all over the world and they have developed many kinds of drug carriers but are still expensive or under research so they are not suit for clinical use. Takikawa et al reported new cheap carrier containing PRP using conventional injectable drugs. They use Dalteparin and protamine micro-particles (D/P MPs) as the carrier for PRP and investigate the duration and the enhanced effects of PRP. It can be make easily with common technique and materials in the clinic operation room. Author reports the small clinical experiences of Controlled Release PRP therapy for women hair-loss. Further investigation and improvement will be needed but the result supports the efficacy of the controlled release PRP therapy. It can be useful for not only hair growth but also rejuvenation skin therapy.

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Androgenic alopecia (AGA) and alopecia areata (AA) are common hair loss disorders affecting adult populations worldwide. Alopecia areata is an autoimmune cause of hair loss and most common type in younger populations. Androgenic alopecia, also known as male pattern hair loss (MPHL) is the most common form of alopecia and affects up to 80% of white men and 40% of women. 1 With such a strong prevalence, Physician Assistants in any field, certainly dermatology, can expect to council patents on alopecia throughout their careers. The etiology of male pattern hair loss is androgen-dependent, and a genetically determined trait. Dihydroxytestosterone (DHT) synthesized from testosterone by an enzyme called 5alpha-reductase is thought to be the principal agent for MPHL

Males with AGA have consistent higher levels of DHT and 5alpha-reductase as compared to non-balding counterparts.4 Female

pattern hair loss (FPHL) (or female androgenetic alopecia) is believed to be the same entity.4 However, the requirement of androgens is less clear-cut than in men and the distribution of hair loss is generally different.4 In both men and women normal hair follicles follow a life cycle where the hair follicle undergoes a phase of rapid growth (anagen) to a resting period (telogen). In both men and women, AGA is characterized by an ongoing decline in the duration of anagen, and increase in the duration of telogen and miniaturization of scalp hair follicles.4 Alopecia areata (AA) is a common autoimmune condition, causing inflammation induced hair loss. According to the National Alopecia Areata Foundation over 6.6 million people in the United States and 147 million worldwide have or will develop alopecia areata at some point.

It is a common cause of abrupt-onset hair loss, with both sexes affected equally. Clinically presents with well-demarcated round or oval bald spots on the scalp or other parts of the body.4 although it may occur at any age, alopecia areata is the most common form of alopecia seen in children. Currently no FDA approved treatment exists.3 there is no exact number for health care visits or cost on health care system related to treating alopecia. With such variability in treatment options and the cosmetic nature of the disease, figures reported are not consistent. Currently two FDA approved pharmaceuticals exist for androgenic alopecia: Topical Minoxidil and oral finasteride. Oral finasteride is a 5alpha-reductase inhibitor which prevents conversion of testosterone to DHT. The side effect profile includes decreases sex drive or ability.6 Minoxidil, a piperidinopyrimidine derivative, was noted to cause hypertrichosis when administered orally as an antihypertensive.4 it is now used as a 2% and a 5% topical treatment in a lotion or foam preparation.4 the mechanism of action is not fully understood. Clinical trials in only the vertex region of the scalp have shown regrowth in up 30%–45% of patients. 4 Some patients experience an increased shedding in the first 4–6 weeks of application.4 once started Minoxidil has to be taken indefinitely, with discontinuation any potential hair regrowth will return to baseline. Hair Restoration Surgery stands as the most definitive treatment. The most advanced method is Follicular Unit Transplant (FUE). With this procedure, hair follicles are extracted from the occipital and parietal region. Hair from this region is generally resistant to androgenic alopecia and placed in desired areas, usually from the frontal to crown regions. Hair transplant prices vary by region and clinic, but the range is typically from \$2 to \$10 per graft, with \$4-5 per graft being the average.5 the total cost can range anywhere from \$2,500 to \$20,000.5 Transplant is classically permanent, however pattern hair loss of non-transplanted hair will continue. The invasive nature of the procedure and high cost there continues to be room for advancement in treatment of androgenic alopecia and alopecia areata. Platelet Rich Plasma (PRP) has emerged as a new treatment modality in regenerative plastic surgery and preliminary evidence suggests it might have a beneficial role in hair regrowth... Platelet Rich Plasma is defined as an autologous concentration of plasma with a greater

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count of platelets than that of whole blood.² using the patient's own blood, PRP is extracted. Its action depends on the released growth factors from platelets. It has been investigated and used in numerous fields of medicine. Proponents of PRP technology suggest that its benefits include hard and soft tissue wound healing, and it is used in this manner in orthopaedics, dermatology, maxillofacial surgery and plastic surgery.