Notes from the Editor Emeritus

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Platelet Rich Plasma (PRP) in Patients with Androgenetic Alopecia (AGA): Does It Work?

Introduction

There are numerous doctors and hair clinics worldwide that regard PRP simply as a hip, easy to perform, and, above all, lucrative form of therapy that may or may not work, but at least does no harm. In addition, its application in hair loss disorders is becoming very popular among the general population and many patients are asking for it in our clinics. To illustrate this, a standard internet search for "PRP and hair loss" will give over 3 million hits. However, a similar search in the PubMed scientific literature will reveal a total of just 9 published papers on the subject.

At the 2013 ISHRS Annual Scientific Meeting in San Francisco, I was invited to organize a round table session on the use of PRP in hair loss. Since this is a controversial topic, I invited along a number of highly respected colleagues (including Drs. John Cole, Joe Greco, Bob Niedbalski, Bob Reese, David Perez-Meza, Fabio Rinaldi, and Ryan Welter), who are well known for their experience in the use of PRP. Prior to the meeting, I sent them all a questionnaire addressing a number of key questions such as PRP preparation, injection technique, patient satisfaction, etc. In the absence of evidence-based data, we need to rely on the experience of "PRP experts," and so I would like to summarize the results of the questionnaires that were returned to me about this complex and controversial subject.

Points of agreement

There are several points in which there is general agreement:

1. *The ideal candidates for PRP:* All experts responded that patients with thinning but not fully bald areas are the best candidates, which includes patients in early stages of AGA and female androgentic alopecia (FAGA). Patients with AGA Norwood types I-IV and FAGA Ludwig types I-II are better candidates than Norwood types V-VI and Ludwig III.
2. *Assessment of patient satisfaction after PRP injections:* Most experts agree that approximately 70-90% of patients will see some degree of improvement (this is a subjective assessment since no randomized clinical trials have been performed using objective measurements of hair mass/density). Around 20% will be disappointed with the results. However, when questioned about the realistic outcomes that the patients are told can be achieved with PRP, most of the experts keep patient expectations relatively low, stating that they expect a modest improvement in the diameter of miniaturized hair and the maintenance of existing hair.
3. *Time when improvement in hair growth is expected to be seen:* Most of the experts were of the opinion that improvement would be seen between 2 to 6 months after the PRP injection. Dr. Greco thinks it is important to explain to the patient that the peak effect is at 4-6 months and that the treatment must be continued to achieve long lasting results.
4. *Anesthesia prior to PRP injections:* All use an anesthetic prior to injection, normally ring block with 1% lidocaine.

Differences in approaches

There were several differences in approaches:

1. *PRP preparation:*
   - Joe Greco uses the Emcyte Pure PRP kit.
   - Bob Reese uses the Cytomedix kit.
   - John Cole uses the Angel system.
   - Ryan Welter and David Perez use the Harvest system.
   - Bob Niedbalsky uses PRP plus ACell. For the PRP, he uses the Harvest system.
   - Fabio Rinaldi does not use any kit, instead he buys the components separately.
2. *Activation of platelets:* We know that platelets need to be activated in order to release growth factors, but we do not know whether an exogenous activator is needed or, if this is the case, which one works best. Platelets can be activated by exogenous activators (thrombin, calcium, mechanical trauma) or by a natural activator (collagen). In theory, exogenous activation is not needed for soft tissue injections. Some experts use thrombin (Greco, Cole, Perez, and Reese) or calcium gluconate (Rinaldi) or mechanical trauma by multiple injections (Niedbalsky and Welter) to activate the platelets. Greco also "stimulates" the scalp with a roller prior to injection.
3. *The number of and interval between PRP sessions required for improvement:* Although in this respect the approach of each expert is different, the majority favor two or more sessions 3 to 9 months apart.
4. *Duration of the increase in hair growth after PRP injection:* Nobody seems to know for certain, but it would appear that the treatment must be continued to achieve long lasting results.
5. *Cases in which PRP is offered to patients:* This seems to be a personal choice with a different approach used by each doctor. Dr. Greco, for example, offers it to patients with early stages of AGA who refuse to take approved FDA therapy or complain of its side effects, or simply to those who would like to add a secondary therapy for AGA, even after being informed that PRP injections do not always achieve a positive effect. Drs. Cole and Rinaldi offer it to anyone provided they are good candidates (see ideal candidates above). Dr. Perez-Meza offers it only to patients who do not respond to medical therapy or who do not wish to try any medical treatment including low level laser therapy. Dr. Niedbalski offers it as an alternative to medical therapy to patients who are too young for surgery and who are non-compliant/intolerant of medication. Dr. Bob Reese performs PRP injections only during hair transplantation, but not as a medical therapy for patients with AGA.

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Discussion

The few studies that have been conducted on PRP and hair loss have shown that it does appear to have positive effects on hair growth. PRP induces dermal papilla cell proliferation *in vitro*, induces angiogenesis via VEGF, and up-regulates Wnt-signaling proteins and beta catenin, all of which appear to have important roles in hair follicle activation.

The overall positive experience of serious "PRP experts," including those whose opinion has been sought for this article, tempts us to consider trying PRP in our practices. However, caution is a must. The intervention has to be performed correctly, following the indications of those more experienced than us, and it is important to realize that until randomized, placebo-controlled, clinical studies have proven its efficacy (using objective tools for measuring hair growth), in the eyes of the scientific community PRP will continue to be regarded as a controversial form of therapy for hair loss.

The following are unsolved areas that, in my opinion, need to be addressed:

1. We need to standardize a protocol for PRP preparation. The number of different PRP devices on the market makes it difficult to compare the results.
2. Clinical research studies are needed to assess the concentration of platelets that are being injected into the tissue as well as the concentration of growth factors, correlating both with the clinical response.
3. Although experience and anecdotal clinical data are important, we still need randomized, placebo-controlled, clinical trials to be certain that PRP does in fact induce hair growth.

Let's keep PRP inside the scientific boundaries. Throughout its history, our field has been plagued by the invasion of "miracle" cures through hair potions and lotions. It would be sad to see PRP having a similar fate to these, becoming yet another trivial and short-lived form of untested "popular" therapy.◆

Dear Members: The session at the 2013 Annual Scientific Meeting to which Dr. Jimenez refers was recorded and is available to members in the Members Only section of the ISHRS website at www.ishrs.org. See page 28 of this issue for details.