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The Effect of Platelet-rich Plasma in Treating Androgenic Alopecia in Female Libyan Patients with Curly Hair

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Authors' contributions

This work was carried out in collaboration between all authors. All authors read and approved the final manuscript.

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Short Research Article

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ABSTRACT

Androgenic alopecia is the common type of non-scarring hair loss affecting the scalp in both males and females with genetic pre-determined. Platelet-rich plasma is a preparation of platelets in concentrated plasma. This method is applied for treating different types of alopecia. The present study includes 24 female Libyan patients with androgenic alopecia female pattern. The study aimed to evaluate the efficacy of platelet-rich plasma in treating androgenic alopecia in female Libyan patients with curly hair.

Materials and Methods: This study was conducted during October 2015 to August 2016 on 24 female Libyan patients with androgenic alopecia female pattern; most of them had have curly hair type, and the age group between 28-46 years, with a mean age of 34 years. All the patients were considered for platelet-rich plasma therapy, suffered from androgenic alopecia. They were chosen based on the fact that various hair loss treatments were previously used without evident improvement. Prior to platelet-rich plasma treatment, written consent was obtained from the patients. Additionally, the patients were haematologically and serologically investigated. The study

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began by conducting the hair pull test, followed by injecting platelet-rich plasma of a total volume (2-4cc) in each visit with an insulin syringe over affected areas of the scalp and treatment was repeated every three weeks for four sessions. The improvements of patients were evaluated at the end of 16 weeks.

Results: The patients between the first and fourth session were found with a good reduction in hair loss. Pictures showed a moderate improvement of the hair restoration and coverage. Hair loss was marked per cm2, after the complete treatment of platelet-rich plasma. Hair count number per cm2was found to be increased per cm2, and hair growth was noticed clinically. A good reduction in hair loss was observed especially after the fourth session. Prior to the treatment of platelet-rich plasma, 22 patients (91.6%) had a positive hair pull test while after the treatment; the pull test was negative for 16 patients (67%).

Conclusion: Administration of platelet-rich plasma had a significant effect on female pattern hair loss, and it is a safe, biocompatible and low-cost treatment. It is a highly effective option for treating androgenic alopecia in female Libyan patients with curly hair type. Overall, the patients showed a good satisfaction, suggesting that the treatment has a beneficial role in hair restoration, thus increases the appreciation of the platelet-rich plasma treatment.

Keywords: Androgenic alopecia; platelet-rich plasma; female Libyan patients; curly hair.

1. INTRODUCTION

Androgenic alopecia is a type of hair loss, affects males and females. It is a type of progressive patterned hair falls with a genetic predisposition. Platelet-rich plasma is patient's blood. It is a method for treating various types of alopecia [1,2].

To enhance hair growth with hair transplant surgery, Uebel et al. [3] first described platelet-rich plasma for hair growth in 2006. Since then, basic science studies have demonstrated that activated platelet-rich plasma can stimulate extracellular signalling via fibroblast growth factor (FGF-7) and beta-catenin [2,4]. One pilot study demonstrated clinically important differences in 40% and 54.7% of patients, [4]. Androgenic alopecia is the common type of non-scarring hair loss affecting the scalp [5]. Androgenic alopecia has limited treatment modalities with own adverse effects [6].

Platelet-rich plasma is patient's blood that was centrifuged to increase the concentration of platelets [7].

The aim of the study was to evaluate the efficacy of platelet-rich plasma in treating androgenic alopecia in female Libyan patients with curly hair.

2. MATERIALS AND METHODS

The study was conducted during October 2015 to August 2016, on 24 female Libyan patients with androgenic alopecia female pattern; most of them had curly hair type within the age group of 28-46 years and a mean age of 34 years (Fig. 1). All the patients that were considered for platelet-rich plasma therapy suffered from androgenic alopecia. They were chosen based on the fact that various hair loss treatments were clinically investigated without evidence of improvement. Platelet-rich plasma of a total volume 2-4cc was injected at every visit with an insulin syringe over the affected areas of the scalp and the treatment was repeated every three weeks for four sessions. The outcome was evaluated at the end of the therapy by clinical examination, patients' pictures, hair pull test and patient's own assessment.

The patients were selected on the basis of haematological and serological test and written informed consents were obtained. Baseline hair count numbers were manually counted in the scalp. Before the treatment sessions, the hair pull test was performed. The pictures were taken in every session from front, lateral and back view.

The tubes with platelet-rich plasma were rotated in a centrifugation machine to allow blood separation into three layers; RBC layer, cellular plasma layer and an intermediate platelet-rich plasma layer called the "buffy coat" [8,9]. Platelet-rich plasma of a total volume of 2-4cc was injected in each visit with an insulin syringe over affected areas of the scalp under aseptic precautions, and treatment was repeated every three weeks for four sessions. The hair count was assessed in every patient's visit and all patients were evaluated at the end of 16 weeks.

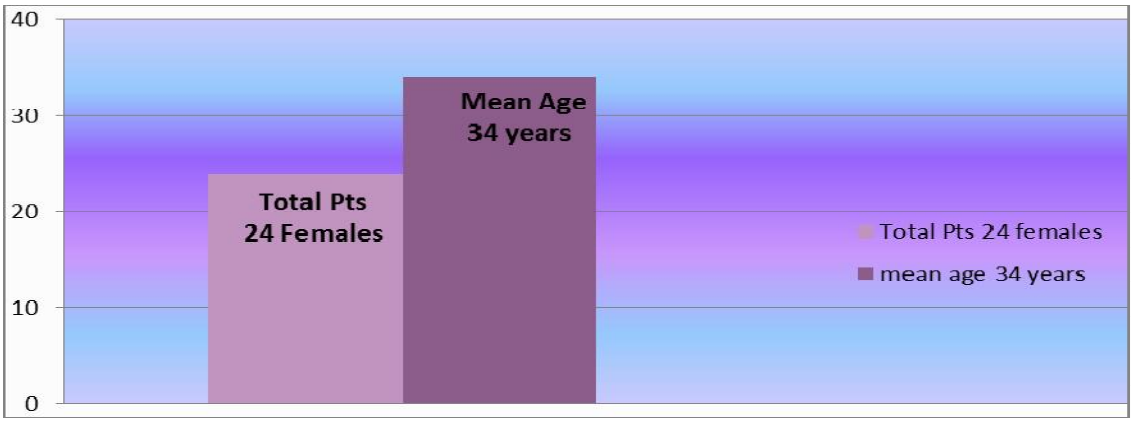

Fig. 1. Twenty-four female patients age group of 28-46 years (mean age 34 years)

3. RESULTS

Platelet-rich plasma achieved a good improvement in hair restoration especially after the end of the third and fourth session. Hair count increased from the average number. Before treatment, the pull test was positive in 22 patients (91.6 %). After the fourth session of platelet-rich plasma therapy, the pull test was negative for 16 patients (67%) (Fig. 2).

Pictures also revealed a satisfactory improvement in hair restoration and coverage.

Hair loss per cm2 was marked and the hair count number increased per cm2 with platelet-rich plasma therapy and hair growth was evaluated clinically in every patient's visit. However, a good reduction in hair loss has been presented in Fig. 3.

4. DISCUSSION

Platelet-rich plasma is a treatment of different types of alopecia [10,11]. The findings of the present study support the results of other studies on the beneficial roles of platelet-rich plasma in androgenic alopecia [12].

All the patients were chosen based on the fact that various hair loss treatments were clinically evaluated without improvement. Prior to platelet-rich plasma treatment, written consent was obtained from the patients.

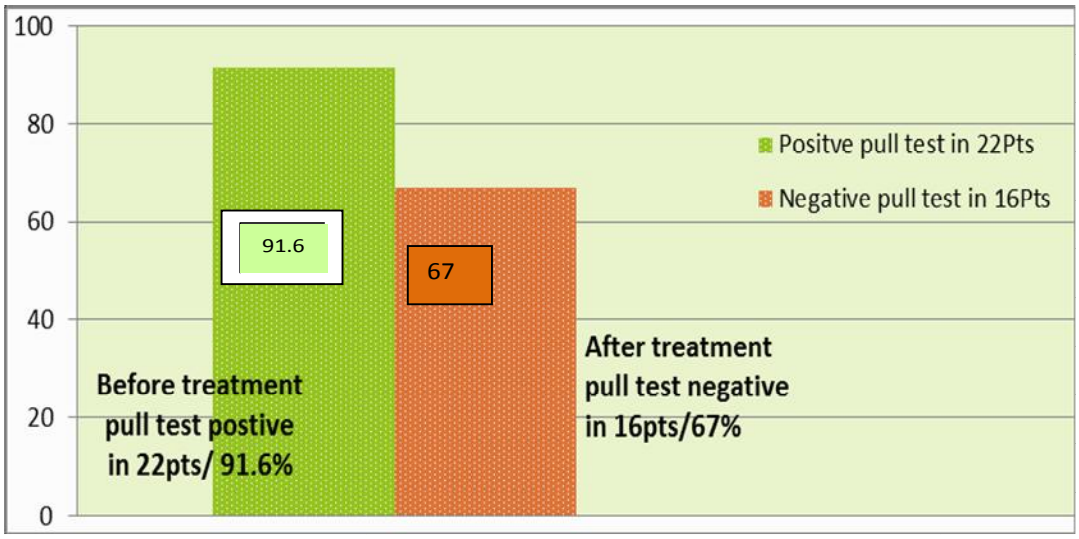

Fig. 2. Pull Test before treatment was positive in 22Pts and after treatment was negative in16Pts

Fig. 3. Pictures of the frontal area of the scalp, in female patient with curly hair; before and during and after PRP

(A,B,C): A. Before. B. During and C. After PRP therapy

All included patients were haematologically and serologically tested. Exclusion criteria were haematological disorders i.e. TFT [13].

A significant reduction in hair fall was observed especially between the third and fourth session clinically and by patient's satisfaction. Moreover, hair growth was assessed at each visit.

In accordance with this study, prior treatment, 22 patients (92%) had a positive hair pull test with a mean hair loss of 8 hairs. After the fourth session, the pull test was negative in 16 patients (67%) with a mean hair loss of 5 hairs as shown in Fig. 3. The results of the hair pull test agree with previous hair pull test study conducted by Besti et al. [8].

Overall, the patients were extremely satisfied with the results. Some side effects following the platelet-rich plasma injections included minimal pain, pinpoint bleeding and redness at the time of injections, with no major adverse effects.

Consequently, the advantages of platelet-rich plasma are: (1) this procedure is very safe, and (2) it is derived from patient's own blood, and does not introduce any foreign drugs or chemicals into the body [14].

Moreover in the present study, the platelet-rich plasma injections are a effective, safe and low-cost option for treating androgenic alopecia in female Libyan patients, with high overall patient satisfaction, The study agrees with several previous findings regarding platelet-rich plasma therapy for hair growth disorders.

5. CONCLUSION

The platelet-rich plasma treatment has shown remarkable beneficial effects, and it is a safe treatment, as it is pure derivative from patient's own blood and does not introduce any foreign drugs or chemicals into the body. It can be concluded that the administration of the platelet-rich plasma had a good effect on female pattern hair loss, as a safe, effective and low-cost treatment option for treating androgenic alopecia in female Libyan patients with curly hair, with no significant adverse effects. This is in agreement with previous studies that recommend, platelet-rich plasma for hair growth disorders.

Overall, the patients had shown good satisfaction, suggesting that the treatment has a beneficial role in hair restoration, thus increases the appreciation of the platelet-rich plasma treatment.

CONSENT

As per international standard or university standard, patient's written consent has been collected and preserved by the authors.

ETHICAL APPROVAL

As per international standard or university standard, written approval of Ethics committee has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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