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Platelet-rich plasma (PRP) for the treatment of vulvar lichen sclerosus in a premenopausal woman: A case report

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ABSTRACT

The use of platelet-rich plasma (PRP) for the treatment of lichen sclerosus (LS) in a 38-year-old premenopausal woman is reported. The diagnosis was confirmed histologically and the symptoms documented using the ICIQ Vaginal Symptoms Questionnaire (ICIQ-VS) and the Female Sexual Function Index (FSFI) questionnaire. PRP was prepared from autologous blood using the Regen Cellular Matrix Kit. PRP was administered twice over two months. Histology at follow-up one month after the second administration showed the epidermis was nearly normal and upper dermal cellularity had been restored. The patient was symptom-free and both her ICIQ-VS and her FSFI scores had improved significantly. PRP is a potential new treatment option for LS which needs further assessment in randomized controlled trials.

1. Introduction

Lichen sclerosus (LS) is an auto-immune inflammatory skin disease affecting mainly the anogenital region in both genders. Onset is typically either in the prepubertal period or in women after the menopause and in men in their fourth decade of life [1]. The prevalence of vulvar LS, which is the most frequent form, is about 1.7% in a general gynecology practice [2]. In men, the prevalence has been reported to be 0.07% [3], although this needs to be reevaluated as it is likely that many cases remain undiagnosed.

The etiology and pathogenesis of LS have not been adequately explained. However, there is evidence of autoimmunity as a pathogenic mechanism. Meyrick and co-workers [4] showed that 21.5% of women with LS had one or more additional autoimmune-related disease, 21% had a family history of autoimmune disease, and 42% had autoimmune antibodies. Studies investigating its genetic etiology have found that 12% of women with vulvar LS have a family history of the disease [5,6]. Trauma and chronic irritation may also be causative factors [7]. Furthermore, hormonal changes influence the occurrence of LS, especially decreased testosterone levels. Decreased levels of 5α-reductase as well as the loss of androgen receptors should also be considered as potential etiological factors [8].

In the treatment of LS, daily application of an ultrapotent topical corticosteroid such as clobetasol 0.05% ointment has been the therapy of choice [9–11]. In corticosteroid-resistant cases, application of topical calcineurin inhibitors (TCIs), such as pimecrolimus and tacrolimus, have a significant anti-inflammatory activity, immunomodulatory effects and a low systemic immunosuppressive potential [1,11]. Avoidance of potential irritants (such as soap and urinary tract infections), moisturization with emollients and treatment of concomitant infections are adjuvant or preventive treatment modalities.

Unfortunately, all these treatments of LS are mainly symptomatic and because they are long term, rates of compliance are low. Platelet-rich plasma (PRP), a regenerative medicine, may be a treatment option for women with LS, especially for those of reproductive age. Platelets are involved in both hard- and soft-tissue repair. They provide the essential growth factors involved in stem cell migration, differentiation and proliferation: fibroblast growth factor (FGF), platelet-derived growth factor (PDGF), transforming growth factor beta (TGF-β), epidermal growth factor (EGF), vascular endothelial growth factor (VEGF), insulin-like growth factor (IGF). The stimulation of fibroblasts and endothelial cells induces new deposition of extracellular matrix and neovascularization [12,13].

2. Case Report

A 38-year-old premenopausal woman complained of itching, burning, stiffness and pain in the external genital area. Sexual activity was impaired because the vaginal introitus was narrow and thick. She

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tried several treatment options, including corticosteroid ointment and moisturization with emollients. She used either pH-neutral soaps or soap substitutes, without any improvement. She also tried 2% testosterone gel, but without success.

We asked her to complete the validated International Consultation on Incontinence Questionnaire – Vaginal Symptoms (ICIQ-VS) instrument rating scale. The total vaginal symptoms score was 42, the total sexual symptoms score was also 42, and the score for quality of life as affected by LS was 8.

She also completed the Female Sexual Function Index (FSFI), a 19-item questionnaire, before and after the PRP treatment. Before the PRP, the individual full-scale score (which can range from 2.0 to 36.0 points), including desire, arousal, lubrication, orgasm, satisfaction and pain, was 3.6.

Written informed consent was obtained from the patient for both the procedure and any subsequent publications concerning the case.

Fig. 1 shows the vulvar LS before treatment, and Fig. 2 the histopathology section. The pretreatment biopsy demonstrated fully developed LS, with epidermal atrophy, hyperkeratosis, subepidermal edema with hyalinization and dilated vessels as well as sparse lymphocytic infiltrates beneath.

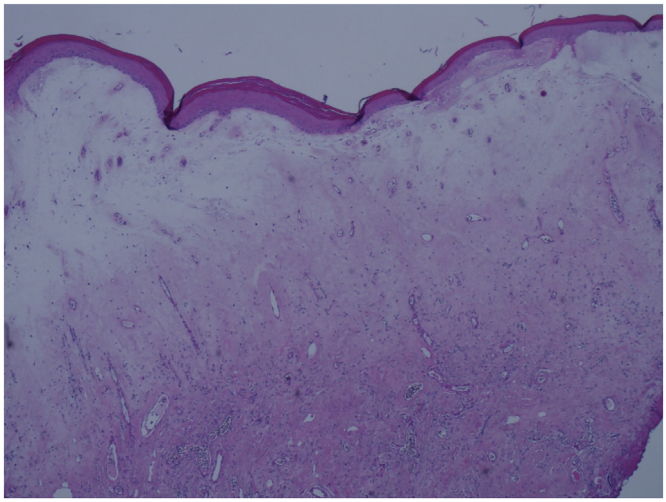

Fig. 2. Pretreatment histopathology (punch biopsy with Ellman radioLase) (hematoxylin-eosin staining; original magnification ×100).

3. The PRP Procedure

PRP was prepared from autologous blood from a venous sample using RegenKit®. Before the application of PRP, anesthetic gel was applied to the vulva and left in place for 10 min. Then 4 ml of PRP was injected subdermally with a 23 G needle in the affected region.

The therapy was repeated two months later. This time, two tubes of Cellular Matrix RegenKit were used, to obtain 8 ml of PRP. Vulvar status at follow-up two months after the second PRP treatment is shown in Fig. 3 and the histopathology section in Fig. 4. The epidermis was nearly normal and upper dermal cellularity had been restored. The patient felt comfortable and was symptom-free. Her sex drive had returned, and her quality of life had increased significantly. This was confirmed by her ICIQ-VS total score, which was 7, sexual matters score, which was 0, and quality-of-life score, which was also 0. Her full-scale FSFI score was now 32.6.

4. Discussion

Recent publications concerning PRP in the treatment of LS [14,15] present similar results to those we obtained with our patient. However, one group [15] used a different platelet separator system (Magellan Autologous Platelet Separator System, Arteriocyte Medical Systems) and different methods for objectively rating the condition, namely a visual analogue scale (VAS) and a modified Investigator's Global Assessment (IGA) Scale. The other group used the Australian Pelvic Floor Questionnaire [14]. Also, a publication concerning penile LS [16] reported that PRP treatment seemed to be helpful according to ratings on the IGA (a six-point Likert scale) and the Dermatology Life Quality index (DLQI). We think it important to have obtained the histopathology findings of the vulvar tissue prior to and after the treatment, as this made it possible to evaluate PRP regenerative ability, which has been reported in only one study [15].

Early onset of vulvar LS is interesting from the etiological point of view. It is possible that oral contraceptives (OCs), especially those with anti-androgen activity, can disturb the androgen-dependent growth of the vulvar skin and so trigger the early onset of LS in susceptible young women [17]. The woman in this case report had a 10-year history of using OCs with antiandrogenic activity (Diane-35/cyproterone acetate; Yarina/drospirenone; and Belara/chlormadinone acetate). She also had a family history of LS (her mother had the condition). Immunohistochemical evaluation of androgen receptors in genital and extragenital LS has provided evidence for the loss of androgen receptors with disease progression in lesioned skin [18]. Based on this evidence, topical testosterone therapy was long widely used in general gynecological practice, until studies in the last two decades found that it has no significant benefit either for symptom reduction (itching, burning,

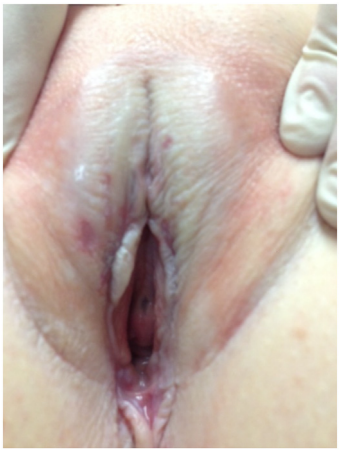

Fig. 1. Vulvar LS before treatment. Pale, ivory-colored lesions are seen above the introitus, with purpura/ecchymosis on the larger and smaller lips, hyperkeratosis on the right smaller lip and ulcerations on the right larger lip.

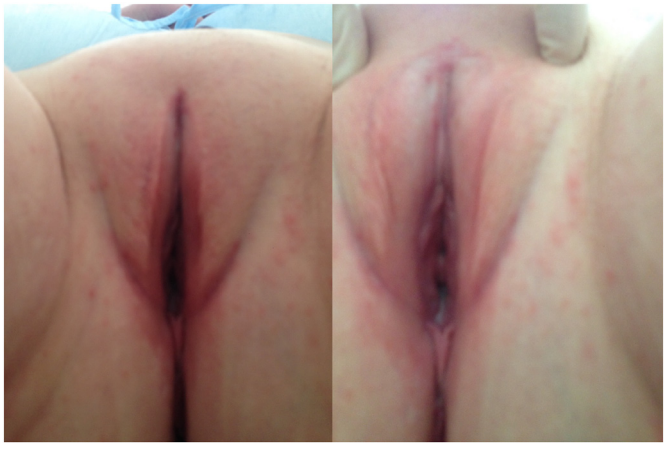

Fig. 3. Vulvar status two months after the second PRP treatment. Almost complete disappearance of the signs of LS can be observed.

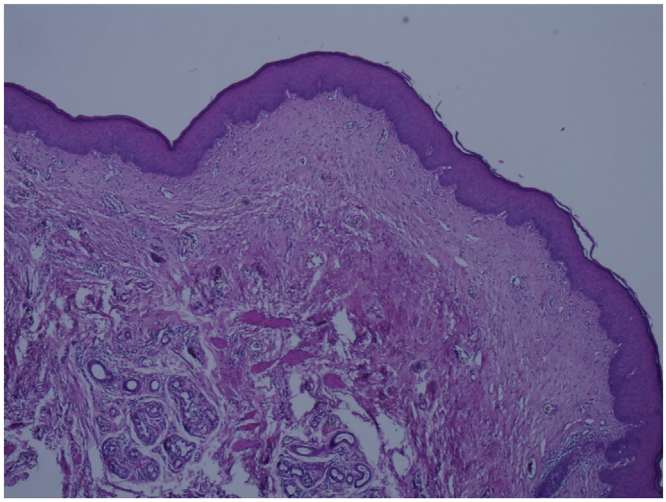

Fig. 4. Post-treatment histopathology (hematoxylin-eosin staining; original magnification ×100).

dyspareunia) or for clinical aspects (atrophy, hyperkeratosis and sclerosis) [19–21]. Some studies even found that topical testosterone worsens the symptoms in comparison with placebo [22]. The current evidence demonstrates the efficacy of clobetasol propionate, mometasone furoate and pimecrolimus in treating genital LS [19], clobetasol 0.05% ointment being the gold standard. The ointment is lipid-soluble and penetrates deeper into the skin than cream. The region affected by LS is soaked with warm water for 15–20 min before clobetasol is rubbed in for 90 s; this is repeated daily for 6 weeks. After 6 weeks, the ointment is applied every second day for another 6 weeks. Thereafter, long-term application twice a week is required [22].

The most important differences between the clobetasol treatment and PRP therapy are the restoration of upper dermal cellularity and skin improvement after PRP therapy. PRP leads to complete regeneration of the LS lesion, and consequently to improved quality of life.

PRP treatment could thus be an option for LS, with avoidance of daily application of an ointment.

In conclusion, our case highlights that PRP seems a promising new treatment for female genital LS, as it promotes regeneration and leads to cessation of symptoms, which is generally not achieved with the standard current therapy options. However, PRP for the treatment of LS should be subject to prospective comparative controlled randomized trials to provide an evidence base for the efficacy of treatment and potential need for follow-up therapy.

Contributors

All authors contributed equally to the preparation of this case report and saw and approved the final manuscript.

Conflict of Interest

The authors declare that they have no conflict of interest regarding the publication of this case report.

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Consent

Patient consent was obtained.

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