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Combining Hyaluronic Acid with Autologous Platelet Rich Plasma (APRP) for the Treatment of Female Sexual Dysfunction and Desire.

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Abstract

Background: It has been estimated that up to 76% of women, depending upon their age, have complaints of sexual dysfunction, including decreased libido, vaginal dryness, pain with intercourse, decreased genital sensation and difficulty or inability to achieve orgasm. We propose a combination of treatments that can increase and improve sexual function and desire in women after surgical and medical pathology have been ruled out or denied by the patient.

Methods: We present results of 14 female patients with female sexual dysfunction. We used the female sexual function index and female distress scales to measure the pre and post treatment results.

Results: Before the treatment, there was an average grade in the FSDS of 15.5 and in the FSFI it was 47.1. After treatment, there was a statistically significant difference in the score of both surveys. The FSDS reduced to average of 9 (p 0.005) and the FSFI increased to 69 (p 0.001).

Conclusions: The use of PRP and hyaluronic acid combined for the improvement of sexual function in women in our study is a promising therapy. For this, we recommend the use of both modalities combined.

Introduction

It is well known that as we get older, sexual desire and function diminish gradually. It has been estimated that up to 76% of women, depending upon their age, have complaints of sexual dysfunction, including decreased libido, vaginal dryness, pain with intercourse, decreased genital sensation and difficulty or inability to achieve orgasm [1]. Female sexual dysfunction takes different forms, including lack of sexual desire, impaired arousal, inability to achieve orgasm, or pain with sexual activity [2].

A woman with normal hormonal levels or a contraindication to hormonal therapy and no surgical pathology has only psychological therapies as Level A choices for all four classes of sexual dysfunction (i.e. for hyposexual desire disorder, arousal disorder, orgasmic disorder, and dyspareunia [3].

Alzate and Londoño reported a study where they reached findings indicating that the vagina of most women has a zone (or zones) of erotic sensitivity whose appropriate stimulation can lead to orgasm; it does not support, however, the particular location and characteristics of the vaginal erogenous zone described by other authors [4]. Knowing this, we can think that by enhancing or augmenting the surface area of such zone or zones, we can achieve an improvement in female sexual arousal, desire and function.

We propose a combination of treatments that can increase and improve sexual function and desire in women after surgical and medical pathology have been ruled out or denied by the patient.

Methods

Fourteen females, ages 36-50, presenting with complaints associated with female orgasmic disorder, hypoactive sexual arousal disorder, an orgasmia, or dyspareunia, participated in the study. All patients were informed of the therapeutic and experimental nature of the localized PRP and hyaluronic acid injection and consented to the procedure.

The materials and equipment included the following: (1) 20cc, 5cc and 1cc syringes, (2) 27 gauge needles, (3) centrifuge, (4) calcium chloride 10% (for activation of PRP), (5) and a topical anesthetic cream (we used EMLA) to promote absorption through the vaginal mucosa.

We asked the patients to fill out two questioners. The first one was the female sexual function index (FSFI). This questioner focuses mainly on sexual feeling and sexual response. Then the female sexual distress scale-revised (FSDS). This last questioner focuses on feelings and problems about sexuality.

First, a topical anesthetic cream was applied to the anterior vaginal wall. The clitoral hood was retracted and cream applied to the clitoris. Thirty minutes after anesthetic application we proceeded with the injections.

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The whole blood of 60 mL was taken from each healthy volunteer. We used Buffered sodium citrate 0.105 M (≈3.2%) glass tube (BD Container).

Sixteen pieces of disposable 5-mL BD containers were prepared for the first centrifugation. Four milliliters of the whole blood was put into each syringe and centrifuged as it stands. The rotation speed and time was 3000 rpm x 3 minutes, which was the minimum for separating red blood cells (RBCs) from plasma empirically by D800 Desktop Centrifuge. The centrifugal forcé was calculated with the corrected real radius to be 704g. The containers were then taken out from the centrifuge and arranged on a holder. We took manually the platelet rich plasma from this containers and had a product of eight containers for these cond centrifugation which were prepared as the same way as the containers used for the first centrifugation. One microgram of PGE1 diluted in 0.05 ml of saline was added to each of 4 containers beforehand. The second centrifugation was performed at 4000 rpm (1252g) for 15 minutes, which is the fastest speed of the machine and considered to be the realistic time as a daily practice. The supernatant was discarded leaving 0.65 ml in each group, and these diment was mixed with it using a manually mix. Finally, 0.65 ml of PRP solution was prepared from 16 ml of the whole blood in each group [5].

After isolation of the PRP, calcium chloride (0.5ml) was added to the PRP isolate.

We proceeded to localize the most sensitive area in the anterior wall located in a space from the pubis to the cervix applying gentle pressure and asking the patient to let us know where she felt the most. We marked the distance to that point from the vaginal introitus. Then we inserted a speculum and measuring the distance, applied 1cc of hyaluronic acid trying to achieve the most augmentation of the sensitive spot or gspot [Figure 1].

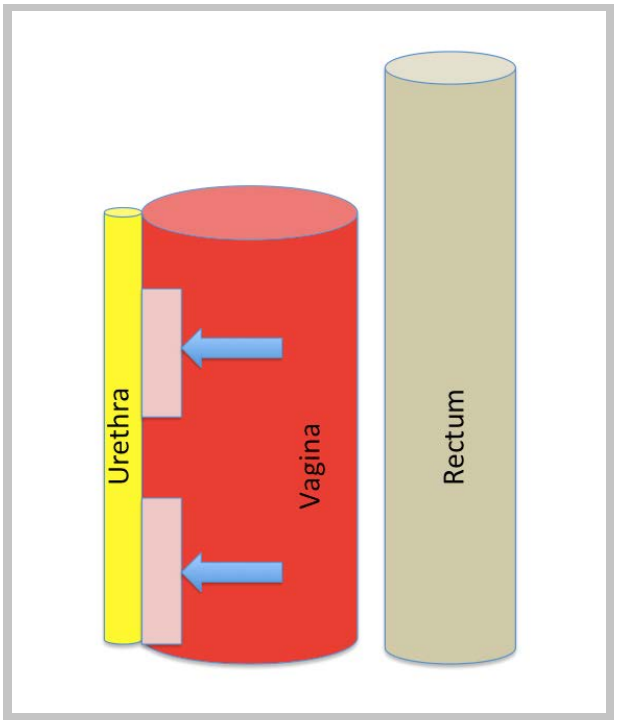

Figure 1: Diagram showing urethra, vagina and rectum. The arrows point to the sites of injection.

Two injections of PRP were given through a 27-gauge needle in the anterior vaginal wall into a space between vagina and urethra most distal from bladder, and 4 injections into the clitoris (at 12, 3, 6 and 9o-clock) [Figure 1 and 2].

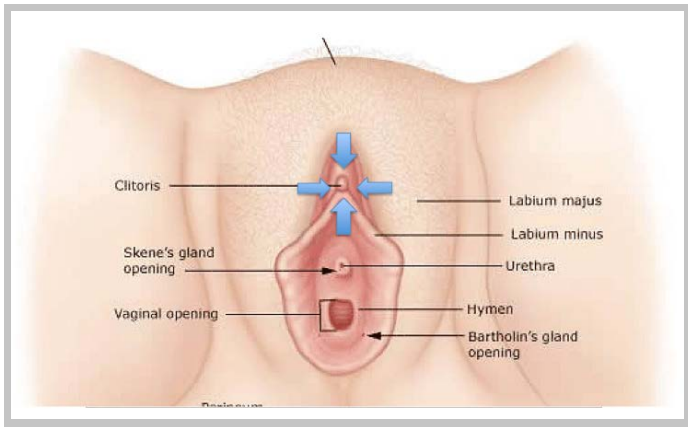

Figure 2: Picture of female genital anatomy. Blue arrows show sites of injection into the clitoris.

After the procedure, we evaluated the patients 12-16 weeks later. We asked them to fill out again the two questioners (FSFI and FSDS).

Exclusion criteria

Patients presenting with sexual dysfunction needing surgery or medical therapy, pregnancy, infection or malignancy were not considered eligible for the procedure.

The Wilcoxon test was used to compare results pre and post treatment using the SPSS statics v23 for mac.

Results

From January to April 2016, we included 14 female patients aged 32 to 50 with a mean of 40. Of these 14 patients, 35.7% use tobacco [6] and 64.3% doesn't [10].

Before the treatment, there was an average grade in the FSDS of 15.5 and in the FSFI it was 47.1. After treatment, there was a statistically significant difference in the score of both surveys. The FSDS reduced to and average of 9 (p 0.005) and the FSFI increased to 69 (p 0.001) [Table 1 and 2].

Discussion

Platelet rich plasma (PRP) has been around the clinical setting since early 90´s with Knighton et al. Tested the use of autologous platelets to treat chronic ulcers with a reduction of almost 50% in the healing time [5], also Ganio et al. reduced the incidence of limb amputation with autologous platelet treatment in chronic ulcers [7]. Nowadays this technology has been used in several specialties, such as orthopedic surgery, vascular surgery, plastic and cosmetic surgery [8, 9] accelerating the healing process [10] due to the amount of growth factors and cytokines contained in this autologous product, which is gaining strength in the regenerative medicine field during the past few years [11, 12].

Growth factors involved in PRP are well known, such as polypeptide growth factor [13], Transforming Growth factor β [14], Insulin like growth factor1 [15], vascular endothelial growth factors [16], Hepatocyte growth factors [17] and basic endothelial fibroblast growth

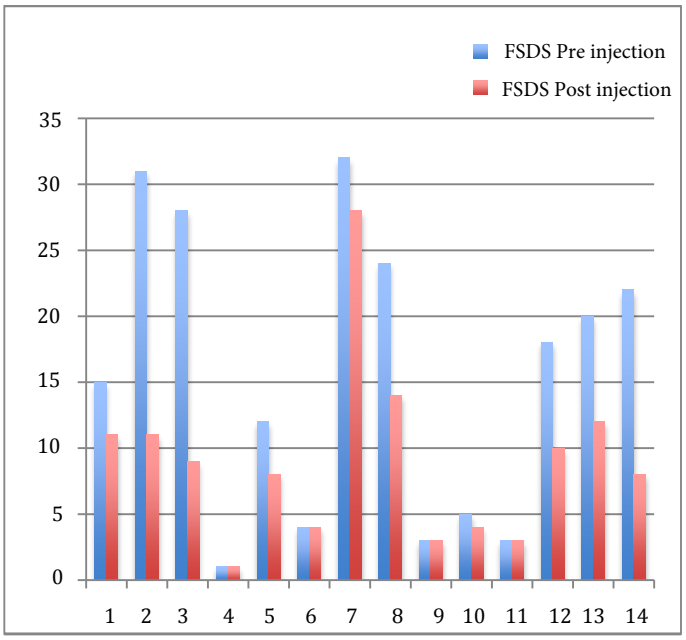

Table 1: Difference in values of pre-treatment and post treatment in the Female Sexual Distress Scale.

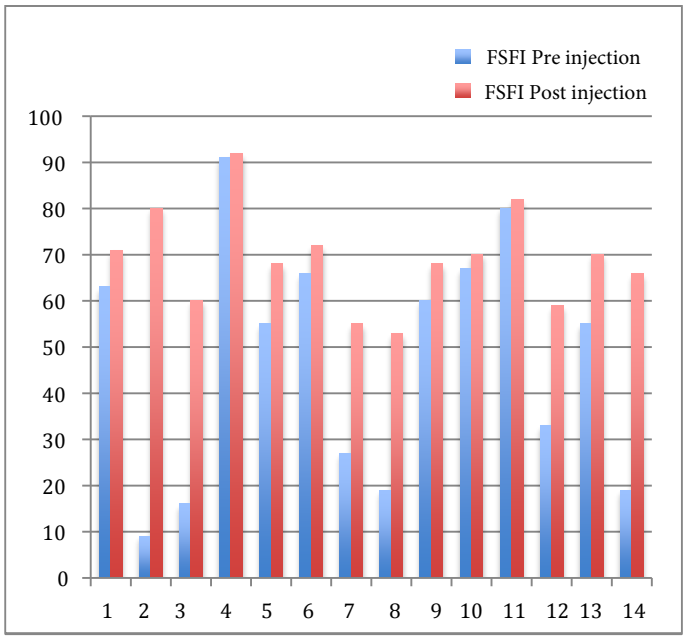

Table 2: Difference in values of pre and post treatment in the Female Sexual Function Index.

factor [18] which are part of the platelet alpha granules. Since the clitoris is mainly a vascular organ that responds with adjustments in its vascular supply, we believe that this growth factors help restore vascular response around the clitoris and hence its function.

It is well studied that the proliferative effect of autologous platelet rich plasma (APRP) on human dermal fibroblasts and human adipose derived stem cells, suggesting its potential for promotion of wound healing and remodeling of the skin and soft tissue. The clinical application of autologous blood derived platelet rich plasma may be very useful in promoting wound healing and skin and soft tissue remodeling without the risk of immune rejection or infection [19].

In addition to this we used Hyaluronic acid as a scaffold for APRP to perpetuate the APRP effect as a treatment.

Hyaluronic acid helps increase surface area in places with put it. It has helped us ameliorate facial lines and helped restore volume. By injecting it inside the most sensitive zone reported by Alzate and Londoño, we believe that there is an increase in its surface area. This helps the patient to feel more and hence more stimulus during sexual intercourse.

We believe that in some cases, just by enhancing confidence in patients, we can get results such as increase in sexual arousal or desire. Our study-involved patients who did not had sexual relations and after treatment they did so. This result may have had several psychological and physical factors not measured.

Significance of this new technology will help improve outcomes due to a neo angiogenic micro-capillary network that favors the delivery of the proper nutrient and oxygen levels to grafted cells [8].

Other authors have used Autologous Platelet Rich Plasma (APRP) as an easy to handle biologic gel that can be mixed stimulating revascularization of the implanted tissues [20].

Multiple studies have demonstrated that the stromal–vascular cell fraction of adipose tissue represents a rich reservoir of regenerative precursor cells that have pro-angiogenic capabilities comparable with those of bone marrow derived stem cells [21, 22].

Some limitations of our study will deserve further investigation in the future. Although our study did not compare the use of PRP alone and the use of hyaluronic acid by it-self to see if results where similar or as a result of any of the two modalities, we obtained positive results. Our study lacks long-term follow up of patients to see how much will the treatment last.

Conclusion

Female sexual dysfunction decreases with age. Although there are surgical and medical pathologies, sometimes patients may benefit from other modalities. The use of PRP and hyaluronic acid combined for the improvement of sexual function in women in our study is a promising therapy. For this, we recommend the use of both modalities combined.

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