Research Article
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Treatment of sexual dysfunction, with platelet rich plasma in woman cancer survivors

Abstract

Objetives: Cancer treatments have managed to improve survival but leaving limitations on quality of life with consequences for sexuality. There is currently no adequate treatment for sexual dysfunction secondary to cancer treatment. Cancer centers offer multidisciplinary treatments with poor therapeutic response. It is necessary to find new and better ways to deal with this problem. In the last 20 years Platelet Rich Plasma (PRP) has been used in different medical areas with reparative and functional effects.

Methods: Original, Quasi-experimental pilot survey. 21 volunteer patients were treated in four sessions of vulvar and vaginal PRP application.

Results: Improvement in the Female Sexual Health Index (FSFI), Vaginal Health Index (VHI), and ability of introitus distention with statistical verification was archived, without improvement in vaginal length. Increase in FSFI from 12.8 to 30.1, VHI from 16 to 20.

Conclusion: Platelet Rich Plasma is a magnificent choice in the treatment of Sexual Dysfunction Secondary to Cancer. Its effect on tissue function and repair is clear.

Keywords: dyspareunia, platelet rich plasma, female sexual dysfunction, female sexual arousal disorder, female orgasmic disorder, female cancer treatment, cancer survivor

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Abbreviations: PRP, platelet-rich plasma; FSFI, female sex health index; VHI, vaginal health index; π, pi

Introduction

Cancer is one of the main causes of death in the world. In 2020, there were 19,292,789 new cases, with 9,958,133 deaths.[1] In 2019, there were more than 8.8 million women with a history of cancer in the United States.[2] Treatments for cancer affect a woman's sexual function. Their treatment includes hormonal therapy, chemotherapy, radiotherapy, and surgery, leaving as a final consequence vaginal synechiae, vasomotor symptoms, pain during sexual intercourse, vaginal dryness, which lead to sexual dysfunction.[3,4] The intensity and importance of these effects are associated with the individual conditions of the woman, and the radical nature of the therapeutic method.[5]

Current treatments have managed to improve survival but leave limitations in quality of life, leaving consequences and sexual dysfunction.[6,7] Treatments with lubricants, moisturizers, hormones, as well as physical therapy and pelvic floor training have been used to improve quality of sex life after cancer.[8] Given the limitation in the use of hormones in hormone-dependent cancer patients, and the poor response to anatomical and functional changes secondary to radiotherapy, new laser treatments have appeared that act on the genital epithelium,[9] but without achieving a recovery of normal sexual function.[10] Given the poor therapeutic results, treatment with a multidisciplinary approach is currently proposed, giving significant importance to psychological support.[11–13]

In the last 20 years, Platelet Rich Plasma (PRP) has been used as an effective treatment in various medical and surgical fields.[14] There are publications on his use in the treatment of wounds, maxillofacial surgery, soft tissue injuries, orthopedic surgery, gastrointestinal surgery, burns and cosmetic procedures.[15] Its first use in female sexual dysfunction was by Charles Runels in 2014, under the name O-Shot,[16] in 2019 it is used for the first time to treat sexual dysfunction after radiotherapy.[17] And in 2022 we published its successful use in a patient with sexual dysfunction secondary to treatment with radiotherapy for rectal cancer, who had not shown improvement after two laser treatment's.[18]

In the absence of an effective therapy to treat this type of sexual dysfunction, and the evidence of the functional and reparative effect of platelets on damaged tissues, we designed this prospective study with the application of Platelet Rich Plasma in patients with Sexual Dysfunction secondary to Treatment of Cancer.

Material and method

Original, Quasi-experimental, pilot survey, carried out at the State Oncology Center of the State of Hgerrmosillo, Sonora, Mexico, in patients recruited during the period of one calendar year of 2023, volunteers between 25 and 65 years old, with Sexual Dysfunction secondary to having received treatment for Cancer; Subjected to vaginal and vulvar treatment with Platelet Rich Plasma with mesotherapy-type instillation. Protocol approved by the ethics and research committee of the Ministry of Health of the State of Sonora in Mexico, with Registration Number 2022-07.

Inclusion Parameters: Female volunteers between 24 and 65 years old, with a minimum of 2 years of having completed their oncological treatment, with a desire to have an active sexual life, who experience sexual dysfunction (FSFI less than 26.5) since their oncological treatment. Exclusion Parameters: Patients who smoke, persistence recurrence or metastasis of cancer, or do not follow treatment.

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Variables:

1) Female Sexual Function Index (FSFI).[19] Instrument that evaluates female sexual function, composed of 19 questions with a score from 0 to 5 and covering 6 areas of sexual response: desire, excitement, lubrication, orgasm, satisfaction and pain or discomfort. The scores per group are obtained from the sum of the value in each response, which is multiplied by a factor that corresponds to each group and gives a weighted score for each area. The final score can be in the range of a minimum of 2 and a maximum of 36, it is obtained by adding the scores of all areas. A total sum less than 26.55 shows sexual dysfunction.

2) Vaginal health index (VHI).[20] quality indices ranging from 1 to 5 for each of the characteristics of vaginal health that evaluate elasticity, secretion, vaginal PH, epithelial integrity, and vaginal humidity. An index of 15 or less is considered vaginal atrophy.

3) Measurement of Vaginal Length, and measurement of vaginal capacity with dilators with a maximum π of 11.62cm.

Medical procedure: The PRP was applied every 30 to 45 days, for a total of four applications, with a fifth appointment a month after the fourth treatment for final evaluation.

Technique:

1) Extraction of 20 ml of peripheral blood.

2) Centrifugation in blue-capped tubes at 1500 rpm for 8 minutes.[21]

3) Separation and application of PRP with insulin syringe. 0.1c.c. in two rows of stitches spaced approximately 1cm apart. Two rows on each vaginal wall (Anterior, Posterior and Lateral). Mesotherapy Technique.

4) Apply the PRP in an insulin syringe with a mesotherapy technique on the fork and inner surface of the labia minora and vestibule, after application of lidocaine spray to vagina and lidocaine cream in vulva.

Statistical management: Descriptive and inferential statistics, Wilcoxon hypothesis contrast test for non-parametric repeated measurements, with statistical verification within the 2nd standard deviation around the median, standing for 95%, with a confidence level of $p \leq 0.05$ for the rejection of the null hypothesis. Using IBM SPSS Statistics version 22.

Results

There were 27 female volunteers with Sexual Dysfunction secondary to oncological treatment. 6 were excluded: One for presenting Vaginismus, another for vascular damage to the peripheral venous network that prevented blood taking, two presented disagreements with their partner, and two for presenting an injury: one with a CIS in the evaluation prior to treatment, the other treated for endometrial cancer showed lung metastasis detected by her oncologist between the first and second therapy. 21 were included, with an average age of 44.6 years, with a maximum of 57 and a minimum of 25 years. 10 had been treated for cervical cancer, 5 for breast cancer, 4 for endometrial cancer and 2 for rectal cancer. Table 1 shows the Stage Types of cancer and the treatment.

Graph 1, shows an increase in FSFI after each application of PRP, with a median before treatment of 12.8 ±5.3 and 30.1 ±3.4 at the end of treatment (p=0.000), with an FSFI outside the range of sexual dysfunction and which is statistically significant. Table 2 shows the first VHI with a median of 16 ±4.29, and after the fourth treatment 20 ±2.42 (p=0.000). Of the 21 patients, only 4 did not achieve an FSFI above 26.55, 3 with Cervical Cancer, and 1 Cancer of Endometrium (Graph 2), all 4 received Radiotherapy to the genitals.

Vaginal length did not show an increase with the treatment, while the capacity of the introitus did improve with an increase in its dilation from a π of 10.36±1.97cm to 11.62±0.59cm (p=0.007) (Table 2). Pain and lubrication were the two FSFI parameters that started with the lowest score (greatest impairment) and were two of the three parameters with the most improvement (Table 3).

The procedure was well tolerated, with minimal discomfort and without complications or side effects.

Table 1 The stage types of cancer and the treatment

Type of cancer	No.	Stage	Oncological treatment	Current therapy
Cervical Cancer	8	IIB	Radiotherapy, Chemotherapy, Brachytherapy	None
	1	IIIB	Radiotherapy, Chemotherapy, Brachytherapy	None
	1	Glandular 1A1	Hysterectomy	None
Breast Cancer	1	IIB	Surgery, Chemotherapy	1 tamoxifen
	1	IA	Surgery, Chemotherapy+ in 1 Oophorectomy	Anastrozole
	2	IIA	Surgery+Radiotherapy+Chemotherapy+Tamoxifeno	Anastrozole
Endometrial Cancer	1	IIIB	Surgery, Radiotherapy, Chemotherapy	None
	2	EIIIG2	Radiotherapy, Chemotherapy, Brachytherapy	None
	2	IBG1	Hysterectomy, Brachytherapy	None
Rectal Cancer	1	IIIA	Radiotherapy, Chemotherapy, Brachytherapy	None
	1	IIA	Radiotherapy, Chemotherapy, Brachytherapy	None

Table 2 The first VHI with a median, and after the fourth treatment

Time off treatment	FSFI		VHI		Vaginal length cm.		Introitus distention π		FSFI less than 26.55	
	Me. ± DS	p	Me. ± DS	P	Me. ± DS	p	Me. ± DS	p	No.	%
Previous	12.8±5.3		16±4.29		8±1.9		10.36±1.97		21	100
First	22.3±4.8	<0.000	16.29±4.29	<0.824	8±1.7	<0.705	10.36±1.22	<0.10	15	71.42
Second	27.5±4.7	<0.000	18±3.65	<0.177	8±1.6	<0.873	10.36±0.97	<0.007	12	57.14
Third	28.2±4.2	<0.000	19±2.85	<0.014	8±1.6	<1.000	10.36±0.62	<0.007	7	33.33
Fourth	30.1±3.4	<0.000	20±2.42	<0.002	8±1.6	<0.505	11.62±0.59	<0.007	4	19.04

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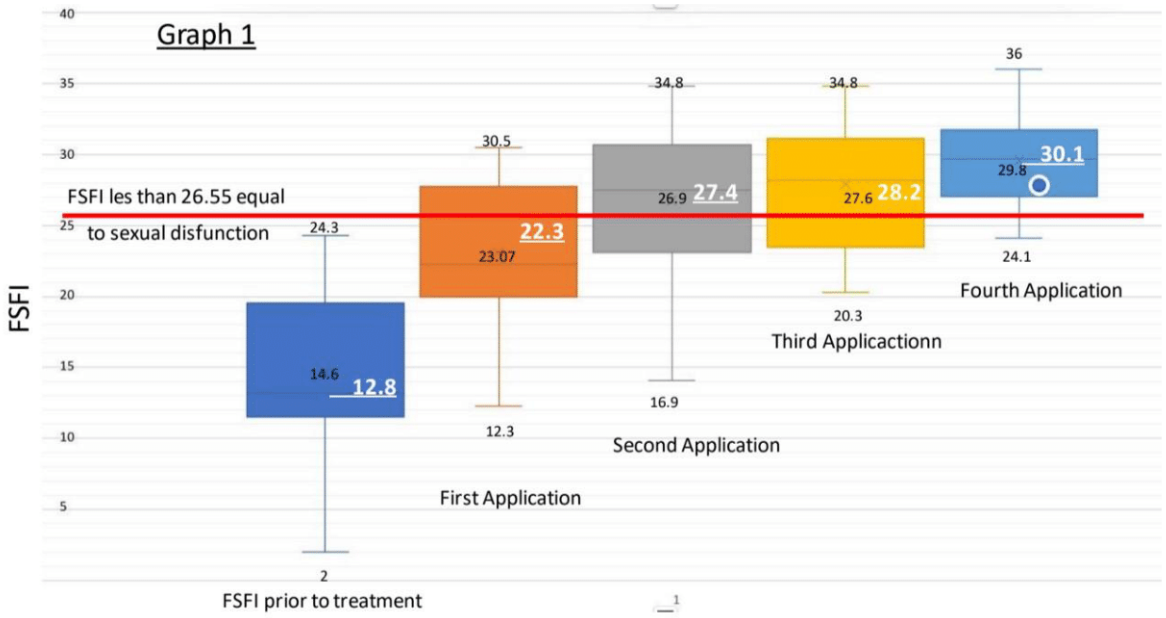
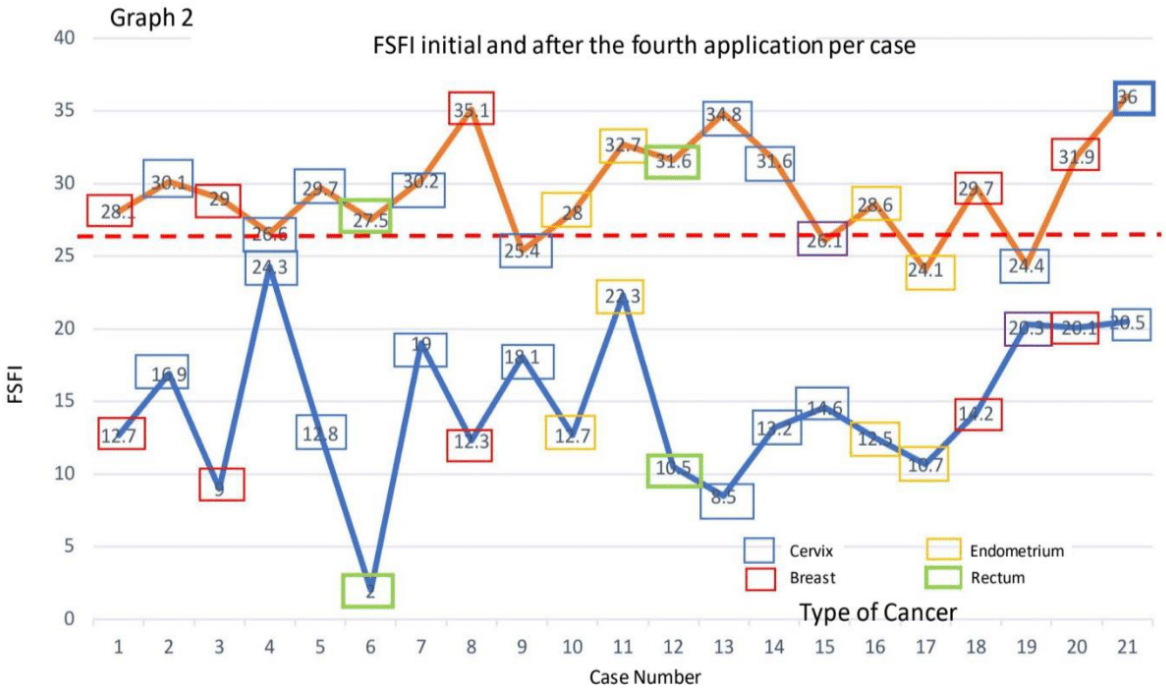
Table 3 Results by sexual response areas

FSFI parameters	Before the first Treatment	After the first treatment		After the second treatment		After the third treatment		After the fourth treatment	
	FSFI	FSFI	P	FSFI	p	FSFI	p	FSFI	p
Desire	2.4±1.17	3±0.92	<.012	3.6±0.81	<.000	3.6±0.91	<.000	3.6±0.87	<.000
Excitement	2.4±1.32	3.6±1.08	<.000	4.2±0.88	<.000	4.8±0.91	<.000	4.8±0.82	<.000
Lubrication	1.8±1.16	3.6±1.29	<.000	4.2±1.26	<.000	4.5±1.02	<.000	4.8±0.89	<.000
Orgasm	2.4±1.77	4±1.06	<.001	4.8±0.95	<.000	4.8±0.96	<.000	5.2±0.74	<.000
Satisfaction	3.2±1.53	4.4±1.03	<.001	4.8±1.17	<.001	4.8±0.88	<.000	6±0.80	<.000
Pain	1.6±1.54	4±1.23	<.002	5.2±5.9	<.000	5.2±0.77	<.000	5.6±0.53	<.000
Total	12.8±5.3	22.3±4.8	<.000	27.5±4.7	<.000	28.2±4.2	<.000	30.1±3.4	<.000



Graph 1 The sexual response of patients with Sexual Dysfunction secondary to oncological treatment, with a median FSFI.



Graph 2 FSFI initial and after the forth application per case.

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Discussion

With the application of PRP, an evident improvement was achieved in the sexual response of patients with Sexual Dysfunction secondary to oncological treatment, with a median FSFI after 4 applications of 30.1, with an inter-quartile range after the last treatment, with little dispersion and no atypical data (Graph 1), median that is outside the range of sexual dysfunction and is statistically significant (p=0.000). 80.95% of the patients leave the Sexual Dysfunction category, and only 4 (19.04%) did not achieve an FSFI above 26.55 (Graph 2).

Is well known the poor response obtained in these patients with non-hormonal treatments,[22] and given the cautious support of the different medical groups in the use of hormonal treatments, the need to search for new therapeutic forms has been created,[23] also we know that the response to both oral and systemic hormones is decreased after radiotherapy.[24]

In recent years, the use of laser has been suggested as a treatment option, however, the medical literature shows ambiguous and controversial results. Laser treatment in postmenopausal women achieves an improvement in the vaginal health index (VHI) and improvement in sexual function, but without achieving a recovery of normal sexual function.[25–27] In patients undergoing Radiotherapy,[28] or taking Anastrozole,[29,30] the results with laser are even poorer with medians of FSFI between 15 and 25, which represents that between more than 50% and 100% do not excluded the classification of sexual dysfunction, even if they achieve a normal VHI.

It is important to note that the VHI is not a reflection of sexual function, the median VHI that we found before treatment was 16, with only 42% of the patients having an initial VHI below 15. This shows how subjective is the VHI to reflect sexual function.

Important anatomical modifications were obtained in the external genitalia; The capacity of the introitus increased from a median π from 10.36±1.97cm to 11.62±0.59cm, If we look only at patients undergoing radiotherapy, the increase is higher; We believe that the use of PRP improves tissue elasticity and increases humidity in the vaginal introitus, with epithelial improvement as reported in other studies [(17)], which reduces pain. Pain which together with the absence of lubrication are the main factors that contribute to the decrease of desire, excitement, satisfaction, and orgasm. Dyspareunia is the most common dysfunction in these patients, often linked to alterations in vaginal tissues (stenosis, vaginal fibrosis, or atrophy), vaginal size (vaginal length and dilation capacity), or vaginal dryness resulting from loss of adequate lubrication during intercourse. Vaginal length did not improve compared to what other articles report [(17)], probably because our patients had completed cancer treatment for at least two years, and the late toxicity of radiotherapy had already left firm synechiae.

Limitations of the study

The number of patients is small, and a study that separates patients undergoing radiotherapy with late genital toxicity from patients without genital damage is needed.

Conclusion

Platelet Rich Plasma is an excellent choice in the treatment of Sexual Dysfunction secondary to cancer. Its effect on tissue function and repair is clear and it is possible to reduce pain and increase lubrication, which acts on the other factors of the sexual response. It is shown that the treatment of Sexual Dysfunction after Cancer depends more on having an effective treatment method than on the intervention of multiple specialties.

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Conflicts of interest

Authors declare that they have no conflicts of interest.

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