

Platelet rich plasma, in the treatment of sexual dysfunction after pelvic radiotherapy for cancer

Abstract

Pelvic radiotherapy in women with cancer is a cause of sexual dysfunction with consequent alteration in their quality of life. Currently there is no adequate therapeutic method to solve it. Platelet-rich (PRP) plasma has been shown to have reparative capacity in tissues that have suffered damage and improves their functionality. We present a case where it was possible to improve the rates of sexual function and vaginal health with the application of PRP. The use of PRP in patients with genital sequelae after radiotherapy is a promising therapeutic method, which requires further studies with an adequate number of patients.

Keywords: pelvic radiotherapy, sexual dysfunction, cancer, biopsy

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Introduction

A large majority of women who survive cancer are subjected to local or systemic therapies, which result in the damage, removal, or destruction of the sexual organs.¹ Pelvic Radiotherapy continues to be an important part of the treatment or constitutes the primary treatment in many cases, for example: Cervical Cancer, Rectal Cancer, and Anal Cancer, leaving genital damage that is manifested by vaginal dryness, dyspareunia, vaginal shortening and stenosis of different degrees, loss of sexual desire and orgasmic problems.² Ken Yoshida found that after pelvic radiotherapy with high-dose brachytherapy, vaginal stenosis was present in 97% of the patients, 75.5% with stenosis between mild to moderate and 13.6% severe, and in a 5-year follow-up, 16.7% presented complete stenosis.³ Fidarove EF reports 83% of telangiectasias and 59% of vaginal shortening.⁴

Sexual health is negatively affected by cancer treatments, being an essential component in physical and emotional well-being, and intervening in quality of life. Unfortunately, Sexual Dysfunction is found between 5 and 90% of survivors.⁵ It is well documented that the concern for sexual health in cancer patients is little considered and therefore little detected, it is necessary for clinicians and researchers to be concerned about this aspect of the health of women with cancer.⁶

There is no effective treatment that prevents or treats the sequelae of cancer treatments. Martins J. found that topical treatments with estrogens, testosterone or moisturizers and lubricants do not prevent the formation of synechiae and stenosis.⁷ The recommendation of the use of dilators has not been shown to prevent this damage either.^{7,8} Laser has been used successfully in the treatment of Sexual Dysfunction in Menopause,⁹ and in patients after breast cancer treatment with similar success;¹⁰ However, the same results are not obtained in cases of genital sequelae due to radiotherapy.^{11,12}

Recent advances in regenerative therapy, including stem cells and Platelet Rich Plasma (PRP), offer therapeutic opportunities given their accessibility, low complexity and long-term protection.¹⁴ The therapeutic use of PRP and its derivatives have found application in multiple areas. The advantage of PRP therapy is the use of physiological reparative processes through the release of Growth Factors, it is a promising alternative to accelerate tissue repair, and allows rapid recovery from tissue damage.¹⁴ The positive effect of PRP has been demonstrated in the treatment of Sexual Dysfunction,¹⁵ and it

has been used in patients with Sexual Dysfunction after treatment for Breast Cancer,¹⁶ and in patients after pelvic radiotherapy.¹⁷

Case presentation

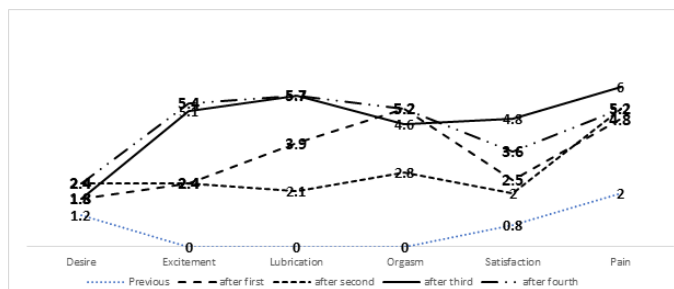
This is a 47-year-old woman, with G1, P1, with a history of Rectal Adenocarcinoma of the lower third IIA T3, Treated with High-Dose Brachytherapy and Chemotherapy in 2017. Seen in 2019 for Sexual Dysfunction and irregular transvaginal bleeding (spotting). She showed hypoestrogenism and in the vaginal fundus an ulceration with mucositis and telangiectasias; after ruling out persistence through a biopsy, she received treatment with two rounds of fractional laser (Monalisa Touch) with no improvement.

In April 2021, we recommended the option of treatment with PRP. Monthly application of PRP in the four quadrants and the entire length of the vagina with mesotherapy-type infiltrations, and application of Platelet Poor Plasma (PPP) in the vaginal introitus and vulva monthly for 4 months is proposed. The PRP and the PPP were obtained from the extraction of 20ml of peripheral blood from the patient, deposited in tubes with anticoagulant followed by centrifugation at 1500 rpm for 8 minutes, separation of the PRP with activation with Calcium Gluconate. Its application was using an insulin syringe (1ml) for each vaginal wall with a mesotherapy technique, the remaining milliliters of PPP were applied to the introitus, and to the vulva on the inner side of the labia minora. Objective and subjective measurement methods were carried out with the Female Sexual Function Index (FSFI)¹⁸ questionnaire, Vaginal Health Index (VHI),¹⁹ vaginal length measurements, vaginal introitus diameter with dilators, vaginal PH, before of each application. Documentation with digital image of the vulva, digital image of vaginostomy with hysteroscope before the first treatment and after the fourth treatment.

Results

The initial FSFI index was 4 and at the end 27.5, considering as Sexual Dysfunction when the index is equal to or less than 26.5, there was an increase in the index of 67.14% over a maximum of 35, being out of the Sexual Dysfunction from the third treatment forward (Table 1). Not all parameters showed the same improvement. Desire went from 1.2 to 2.4 out of a maximum of 6, with an increase of only 20%, Arousal from 0 to 5.4 with an increase of 90%, Lubrication from 0 to 5.7 with an increase of 95%, Orgasm from 0 to 5.2 with an increase of

86.6%, Satisfaction from 0.8 to 3.6 with an increase of 50%, and Pain started with 2 and ended at 5.2 with a decrease of 53.3% (Graph 1).



Graph 1 Index by parameter of the FSFI, and by order of application.

Table 1 Sexual dysfunction index

Treatment	Desire	Excitement	Lubrication	Orgasm	Satisfaction	Pain	Total	PH	Diameter	Length	VHI
previous	1.2	0	0	0	0.8	2	4	6.7	1.6	4	9
After first	1.8	2.4	3.9	5.2	2.5	4.8	24.8	6	2.4	4.3	
After second	2.4	2.4	2.1	2.8	2	5.2	16.9	5.8	2.7	5	
After third	1.8	5.1	5.7	4.6	4.8	6	28*	5	3.3	5	
After fourth	2.4	5.4	5.7	5.2	3.6	5.2	27.7*	5	3.7	5	20**

When FSFI index is equal to or less of 26.5 is considered Sexual Dysfunction. Normal Sexual Response *.The normal VGI is of 12 or more**.

It started with a short (4cm) and narrow (1.6cm) vagina, and after the 4th PRP application a poor increase in vaginal length (1cm) was achieved, reaching 5cm, while the vaginal capacity of a diameter initial 1.6cm, a considerable increase is achieved upon reaching a diameter of 3.7cm (Table 1).

The Vaginal Health Index that includes vaginal elasticity, secretion consistency, PH, mucosal aspects, and vaginal hydration, started with 9 and ended with 20, with 12 points or more being considered normal. The vulvar digital image shows a vulva with hypoestrogenism (Image 1), and after the 4th treatment a hydrated introitus (Image 2).

The vaginal image prior to treatment shows a vaginal fundus with a large ulcer with telangiectasias and mucositis (Image 3), and after the 4th treatment a vagina is found with frank reduction in the size of the ulcer, mucositis in resolution and absence of telangiectasias (Image 4).



Image 1 Vulva prior treatment.



Image 2 Vulva after fourth treatment.

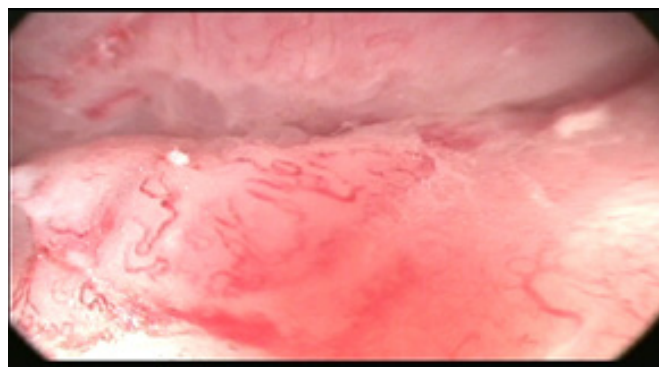


Image 3 Vagina prior treatment.

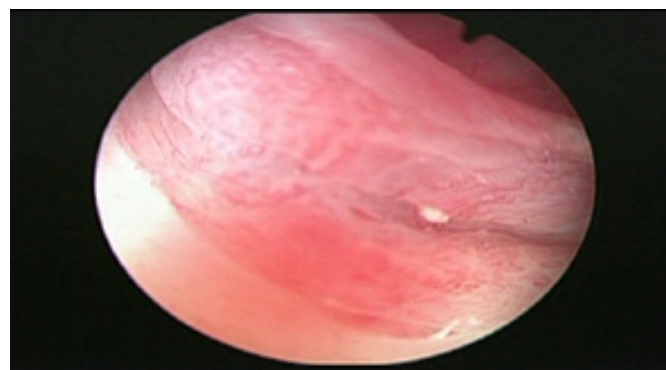


Image 4 Vagina after fourth treatment.

Discussion

Pelvic radiotherapy is a cause of Sexual Dysfunction in cancer survivors, tissue damage with fibrosis, rigidity, decreased irrigation at

the vulvar and vaginal level, manifested with inflammation, mucositis, telangiectasis, or late damage with vaginal narrowing and shortening, damage that prevents a normal sexual life. Maintaining a fulfilling sexual life is essential for health and quality of life, regardless of age, marital or partner status, sexual orientation, race, or socioeconomic status.

To date, there is no adequate therapy to resolve these damages.^{7,8} The fractional laser, which is considered a new treatment for Urogenital Syndrome of Menopause, has not been shown to resolve sexual dysfunction in women with pelvic radiotherapy.^{11,12}

In this case, although the cancer treatment was with High Dose Brachytherapy and with significant late sequelae, very good results were obtained with the use of PRP. It was possible to resolve the sexual dysfunction, reaching normal FSFI and ISV indices. The vaginal diameter was increased from 1.6 cm to 3.7cm. This increase in diameter, plus the decrease in pain and the increase in lubrication, allowed the patient to start normal sexual relationship, but the achievement in vaginal length was very poor, going from 4 to 5cm; There is an article that uses PRP in patients with sequelae from pelvic radiotherapy that reports achieving improvement in sexual dysfunction but without reaching the normal rate, and reports the same poor result in vaginal length.¹⁷ Regarding the possible negative effects of growth factors on an area with a history of cancer, there are in vitro studies²⁰ that rule out the migration of stem cells or PRP to malignant cells, and clinical studies of the use of PRP in areas of radiated cancer, do not find neoplastic stimulation.^{17,21,22}

Commentary

This case shows the success achieved with the use of PRP in the treatment of sexual dysfunction secondary to Pelvic Radiotherapy in a patient with Cancer. It shows the functional and reparative capacity of PRP and opens a therapeutic possibility for Sexual Dysfunction secondary to cancer therapy, allowing women not only to survive, but also to improve their quality of life. Studies with an adequate number of patients are necessary for establish the safety and effectiveness of this therapeutic possibility.

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Conflicts of interest

No potential conflict of interest was reported by the authors.

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