

RESEARCH ARTICLE

Effectiveness of Sildenafil in Erectile Sexual Dysfunction in Prostate Cancer Patients

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Abstract: **Introduction:** Prostate cancer is the first cause of death by cancer in Cuban men and affects the quality of their sexual life. **Objective:** To investigate the efficacy of sildenafil in the treatment of erectile dysfunction in patients with prostate cancer after hormone or radiotherapy. **Method:** An observational, double perspective and cross-sectional study was conducted in the Service of Urology of Hospital “Dr. Agostinho Neto” in Guantanamo from 2014 to 2018, which was approved by the medical ethics committee. The study consisted of 70 patients diagnosed with prostate cancer who received hormone therapy or radiotherapy with erectile dysfunction. In each patient, we studied age, cancer treatment, time of postoperative dysfunction, and the response of penile erectile function to the use of sildenafil. **Results:** 37.2% of the patients were between 70 and 79 years old, and 79.1% of the patients received hormone therapy; the highest proportion of erectile dysfunction occurred 1–2 years after treatment (48.8%); 81.4% responded adequately to sildenafil treatment, which was not related to hormone or radiotherapy for cancer. **Conclusions:** Prostate cancer patients treated with hormone and/or radiotherapy benefit from the efficacy of sildenafil.

Keywords: Prostate cancer, Erectile sexual dysfunction, Sildenafil

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1. Introduction

Cancer is one of the earliest causes of death in the world^[1,2]. In Cuba, prostate cancer (PC) was the main cause of cancer death in men in 2017; the mortality rate was $55.7 \times 100,000$ inhabitants, much higher in men older than 60 years^[3]. The importance of the study of PC, not only for its biological and social impact, but also for its influence on the psyche and quality of life of the patient, which is usually affected by the elevated erectile sexual dysfunction (ESD), after oncological treatment^[4,5].

Various definitions of ESD can be found in the medical literature^[6-8], although they all meet the purpose of this study, none fully meets the author's expectations. Therefore, from the perspective of theoretical systematization, the definition of ESD is as follows: The inability of a man to recurrently and with a durability of at least six months, develop and maintain an erection of the penis that allows the achievement of a satisfactory sexual function, alone or with a partner.

It is estimated that, worldwide, about 152 million men have been diagnosed with ESD, and the incidence will reach 320 million men by 2030^[9,10]. At present, more than 60% of men suffer from ESD, erectile sexual dysfunction, caused by various organic and psychological entities^[11].

There are currently updated options for evaluating and dealing with ESD;

among these are the selective inhibitors of GMPc phosphodiesterase-5 (IFD-5), such as sildenafil citrate, whose usefulness in the management of this condition has been documented by several researchers^[12,13].

The authors of this article did not find a paper related to the research field of this article, so the purpose is to describe the results of sildenafil used in ESD management in PC patients treated with hormone or radiotherapy.

2. Method

From 2014 to 2018, an observational, ambispective and cross-sectional study was conducted in the Service of Urology of Hospital “Dr. Agostinho Neto” in Guantanamo, which was approved by the medical ethics committee, and each patient agreed to be included in the study.

The study included 70 patients diagnosed with PC, from which 43 patients were selected by purposive sampling, who met the following criteria: age equal to or older than 50 years; ESD secondary to hormone therapy, rather than radical retropubic prostatectomy (RRP) and castration; no primary hypogonadism; diabetic polyneuropathy, treated with immunotherapy or nitrites.

The diagnosis of PC and ESD is based on the criteria specified in the scientific literature^[12-14]. The international concise erectile function index was used to evaluate the quality of sexual life^[15]. Radiotherapy was considered to use high-energy or other types of radiation to destroy or prevent the growth of cancer cells. Hormone therapy was considered through the use of luteinizing hormone releasing hormone agonists (e.g.

leuprolide and zoledex); antiandrogens such as flutamide and casodex and oestrogens such as diethylstilbestrol.

Each patient's age, PC treatment, the time to onset of ESD after PC, and the response to penile erectile function after sildenafil use were studied.

Each patient was offered treatment with 25 to 100 mg sildenafil (50 mg tablets, produced in Cuba). The treatment response was evaluated six months after use, according to the opinions of patients, which was considered in one of the following categories:

(a) Adequate response: when they felt that they achieved penile erections that enabled them to develop satisfactory sexual function, alone or with a partner.

(b) Poorly adequate: when he felt that he achieved penile erections, but that they did not enable him to develop satisfactory sexual function, alone or with a partner.

(c) Inadequate: when they felt that they did not achieve penile erections.

A literature search was conducted in the medical literature databases of MedLine, Embase, SciELO and Cochrane library. The terms prostate cancer and erectile dysfunction were used in Spanish and English. Frequency analysis was used for the study of the variables and the application of the Chi-square technique for independence (the level of significance was considered to be a value of $p \leq 0.05$). The SPSS® version 20.0 program was used.

3. Results

Table 1 shows that the highest percentage of patients were aged between 70 and 79 years (37.2%).

Table 1. Prostate cancer patients by age and type of treatment

Age group	No.	%
50–59	6	14.0
60–69	19	44.1
70–79	16	37.2
Above 80	2	4.7

Table 2. Relationship between the time of postoperative erectile dysfunction and treatment of prostate cancer

Therapeutic method	ESD occurrence time (year)							
	Less than 1		1 to 2		more than 2		Total	
	No.	%	No.	%	No.	%	No.	%
Hormonal	10	23.3	17	39.5	7	16.3	34	79.1
Radiotherapy	3	6.9	4	9.3	2	4.6	9	20.9
Total	13	30.2	21	48.8	9	20.9	43	100.0

$$p = 0.9559$$

79.1% of the patients received hormone therapy and 20.9% received radiotherapy.

In the highest proportion of patients, ESD occurred within 1 to 2 years of treatment (**Table 2**), although there was no relationship between these variables ($p > 0.05$).

Most patients expressed an adequate response to

sildenafil treatment. Patients were stratified according to treatment type and treatment response. The results showed that patients with PC treated by both types of treatment methods responded well, 25 patients out of 30 treated with hormone (representing 83.3%) and 10 patients out of 13 treated with radiotherapy (representing

76.9%) showed adequate responses ($p < 0.05$) (Table 3).

Table 3. Patients according to type of treatment and their response

Treatment type	Sildenafil treatment response							
	Proper		Bit matching		Inappropriate		Total	
	No.	%	No.	%	No.	%	No.	%
Hormonal	25	58.1	1	2.3	4	9.3	30	69.7
Radiotherapy	10	23.3	1	2.3	2	4.7	13	30.3
Total	35	81.4	1	4.6	7	15.0	43	100.0

$p = 0.049$

The results suggested that the benefit of sildenafil treatment was apparent in patients with PC and DSE, irrespective of whether they were treated with hormone therapy or radiotherapy ($p > 0.05$).

4. Discussion and conclusion

The introduction and widespread use of prostate-specific antigen, community education and increasingly frequent control of high-risk groups has led to an increase in the early diagnosis of PC, and a greater number of patients who are candidates for curative treatment, for which several options are available: Radical surgery, hormone therapy, radiotherapy and brachytherapy. All of these involve a risk of ESD, which is usually lower with robotic surgery (3%–51%); and higher with radical retropubic prostatectomy and laparoscopic surgery which generate higher figures (36%–91%)^[16,17,18].

The largest proportion of patients in the study were the elderly, results similar to those reported by other researchers^[14,19], and which express the multifactorial characteristics of ESD in this group of patients, whose genesis was influenced by age and treatment of cancer, although the influence of psychological factors caused by knowing that they are cancer patients and the comorbidity of these factors, such as diabetes mellitus, arterial hypertension and smoking, were not excluded.

All patients included in this study received hormone therapy. The proportion of hormone therapy is the highest in PC and ESD, which is consistent with the results of other authors, who point out that hormone therapy is the most commonly used treatment modality in PC^[19,20].

The high frequency of ESD in patients with PC, regardless of the specific treatment applied, justifies the prescription of IFD-5 drugs such as sildenafil, vardenafil and tadalafil^[12,13,16].

Oral administration of IFD-5 drugs is effective in at least 50% of men. The inhibition of the enzyme phosphodiesterase-5 increases the blood flow to the penis and prolongs the duration of GMPc in the cavernous body, thus increasing the swelling and stiffness of the penis.

The study was limited by the small sample size and there were no psychometric tests to evaluate patients.

However, these results provided relevant information for further study of the purpose and field of this study, as they enabled us to conclude that PC patients receiving hormone therapy benefit from the effects of IFD-5, such as sildenafil.

Conflict of interest

The authors declared no conflict of interest.

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