



ORIGINAL ARTICLE

Effectiveness of rectal ozone therapy in patients with cervicitis associated with Papilloma Virus

Efectividad de la ozonoterapia rectal en pacientes con cervicitis asociada a Papiloma Virus

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ABSTRACT

Introduction: medical ozone therapy has become increasingly popular as a treatment for gynecological ailments.

Objective: to evaluate the effectiveness of rectal ozone therapy in patients with cervicitis associated with papillomavirus at the "Dr. León Cuervo Rubio" Clinical and Surgical Teaching Hospital, from January 2019 to December 2020.

Methods: an observational, descriptive, prospective longitudinal study was carried out in the Natural and Traditional Medicine service of the "Dr. León Cuervo Rubio" Surgical Clinical Teaching Hospital. The universe consisted of 187 patients who attended the neck pathology consultation and the sample consisted of 87 patients who met the inclusion criteria. Scientific methods were used: Theoretical, Empirical and Statistical. The information was processed using SPSS VERSION 21 software.

Results: the predominant age group was 45 years and older in the total sample and one to three sexual partners. The highest number of HPV-associated cervicitis lesions was the most observed in the sample. Clinical improvement was observed in the patients who presented lesions after applying the first cycle. The treatment was effective in most of the patients, more than 80 % did not present adverse side effects.

Conclusions: Rectal ozone therapy proved to be effective and accepted by all patients with cervicitis associated with papilloma virus. A clinical improvement was observed after applying the first and second cycle of treatment, with minimal undesirable side effects.

Keywords: Cervicitis; Ozone Therapy; Human Papillomavirus Viruses; Effectiveness.

RESUMEN

Introducción: la Ozonoterapia médica ha tomado auge como tratamiento en padecimientos ginecológicos.

Objetivo: evaluar la efectividad de la Ozonoterapia rectal en pacientes con Cervicitis asociada Papiloma Virus en Hospital Clínico Quirúrgico Docente "Dr. León Cuervo Rubio", en el período enero 2019 a diciembre 2020.

Métodos: se realizó un estudio observacional, descriptivo, de corte longitudinal prospectivo en el servicio de Medicina Natural y Tradicional del Hospital Clínico Quirúrgico Docente "Dr. León Cuervo Rubio". El universo lo constituyeron 187 pacientes que asistieron a la consulta de patología de cuello y la muestra la conformaron 87 pacientes, que cumplieron con los criterios de inclusión. Se utilizaron los métodos científicos: Teóricos, Empíricos y Estadísticos. La información se procesó mediante el Software SPSS VERSIÓN 21.

Resultados: predominó el grupo de edad de 45 y más años del total de la muestra y de una a tres parejas sexuales. El mayor número de lesiones propias de la Cervicitis asociada HPV, fue la más observada en la muestra. Se constató una mejoría clínica en las pacientes que presentaron lesiones después de aplicar el primer ciclo. Se constató efectividad del tratamiento en la mayoría de las pacientes, más del 80 % no presentó reacciones de efectos secundarios adversos.

Conclusiones: la Ozonoterapia rectal resultó ser efectiva, y aceptada por todas las pacientes con Cervicitis asociada a Papiloma Virus. Constatándose una mejoría clínica, después de aplicar el primer y segundo ciclo del tratamiento, con efectos secundarios indeseables mínimos.

Palabras clave: Cervicitis; Ozonoterapia Rectal; Virus del Papiloma Virus; Efectividad.

INTRODUCTION

Cervicitis is infectious or non-infectious inflammation of the cervix. Findings may include vaginal discharge, vaginal bleeding, erythema and cervical friability. Acute cervicitis is usually caused by infection; chronic cervicitis is usually not caused by infection. Cervicitis may progress to endometritis and pelvic inflammatory disease (PID). The most common infectious cause of cervicitis is Chlamydia trachomatis, followed by Neisseria gonorrhoea. Other causes include herpes simplex virus (HSV), Trichomonas vaginalis, and Mycoplasma genitalium. Often a pathogen cannot be identified. The cervix may also be inflamed as part of a vaginitis (bacterial vaginosis, trichomoniasis).⁽¹⁾

Non-infectious causes of cervicitis include gynecologic procedures, foreign bodies (pessaries, barrier contraceptive devices), chemicals (in douches or contraceptive creams), and allergens (latex). Examination findings may include purulent discharge or mucopurulent discharge, cervical friability (bleeding after touching the cervix with a swab), and cervical erythema and edema. Diagnosis of cervicitis includes (clinical signs, studies for vaginitis and sexually transmitted diseases). Cervicitis is diagnosed if women have cervical discharge (purulent or mucopurulent) or cervical friability. Findings suggestive of a specific cause or other disorders include the following: fever, cervical pain on mobilization, vesicles, vulvar or vaginal pain and/or ulceration, punctate hemorrhages (strawberry spots): Trichomoniasis.^(1,2)

Within this gynecological disease, cervicitis associated with human papillomavirus (HPV), a name given to a large group of DNA viruses related to each other and belonging to the papilloma viridae family, which have no envelope, is of vital importance due to its high frequency and for being a predisposing factor to cervical cancer (being considered the second type of cancer in women due to its frequency). It is one of the most frequent sexually transmitted diseases in women.⁽²⁾

According to the World Health Organization, it is the second leading cause of female mortality from cancer worldwide, with some 300,000 deaths per year. Eighty percent of the cases occur in developing countries and there are about 500,000 cases annually.⁽³⁾ In Spain, women aged 15 years and older (20,17 million) are at risk of developing cervical cancer. It is estimated that about 2,7 % of women harbor cervical HPV infection -16/18 at any given time, and 63,1 % of invasive cervical cancers are attributed to HPV 16 or 18. In the United States about 3,9 % of women harbor cervical HPV infection -16/18 at any given time, and 71,2 % of invasive cervical cancers are attributed to HPV 16 or 18.⁽⁴⁾

Cuba is today the Latin American country with the lowest mortality rate for this disease. However, despite the existence of a massive screening program since the late 60's of the last century, the results have not been homogeneously flattering, and statistics from the Ministry of Public Health show that cervical cancer is the second leading cause of death from cancer in women.⁽⁵⁾

Once the HPV lesion is diagnosed (iodine positive areas in the form of patches) by colposcopy, there are different treatments within which we can mention cervical conization, salpingoferection, lymph node dissection, cryotherapy, chemotherapy and radiotherapy, however, there are other alternative therapies such as ozone therapy.⁽⁶⁾

MNT, known internationally as alternative, energetic and naturalistic, or complementary, is part of the universal cultural heritage, that is, concepts and practices that have been inherited from generation to generation.⁽⁷⁾

The World Health Organization (WHO), in the context of its 29th World Assembly, held in 1978 in Geneva, Switzerland, recognized for the first time the importance of traditional and natural medicine professionals and the importance of the medicines and techniques they use.⁽⁸⁾

In Cuba, the Program for the Development of Traditional and Natural Medicine was approved in 1996, and in 2002, Agreement No. 4282 of the Executive Committee of the Council of Ministers was adopted, which establishes a series of measures, including the creation of a National Center for the Development of TRM.⁽⁷⁾

The modalities of natural and traditional medicine are defined in Ministerial Resolution No. 261 of August 24, 2009, which include: phytotherapy, apitherapy, traditional Asian medicine, ozone therapy, homeopathy, floral therapy, medical hydrology, heliothalassotherapy, traditional therapeutic exercises and naturopathic nutritional guidance.⁽⁸⁾

Ozone therapy is the therapy performed with ozone. Its use improves the quality of life and normalizes the basic functions of our ecosystem; it can be applied individually or complementary to other therapies, acting synergistically.⁽⁹⁾

In the province of Pinar del Río, the use of Ozone Therapy is widely spread both at primary and secondary health level, in multiple pathologies such as oral-facial, osteomyoarticular system, skin and even in the one that occupies the present research, however, there are no reports of Ozone Therapy studies in cervicitis that allow us to carry out a preliminary study in our environment and with which to compare.

METHODS

An observational, descriptive, prospective longitudinal study was carried out with the objective of evaluating the effectiveness of rectal Ozone Therapy in patients with Cervicitis associated to Papilloma Virus treated at the Natural and Traditional Medicine Service of the Dr. "León Cuervo Rubio" Dr. Clinical and Surgical Teaching Provincial Hospital of Pinar del Río municipality from January to December 2020.

The study universe consisted of 187 patients who attended the neck pathology consultation at the Turcio Lima Community Polyclinic and the sample consisted of 87 patients with a diagnosis of HPV-associated cervicitis. The variables used were age groups, number of sexual partners, number of lesions present, treatment cycles, treatment effectiveness and undesirable side effects.

Inclusion criteria

- Patients with a diagnosis of HPV-associated cervicitis who agreed to participate in the research (Appendix 1).
- Patients who accept the therapeutic method once it has been explained.
- Patients who do not have contraindications to receive Ozone Therapy.
- Patients older than 19 years who are psychically fit.

Exclusion criteria

- Patients with coagulation disorders, decompensated epilepsy, pregnant women, coagulopathies, anemia. Patients whose psychic-physical qualities do not allow them to take part in the research.

Exit criteria

- Patients who, during the application of the treatment, present some undesirable effect that makes it impossible to continue with the treatment.
- Interruption of treatment for any reason.
- Voluntary abandonment.

The dialectical-materialistic method was used as an essential tool for the analysis, which allowed the study of rectal ozone therapy in patients with cervicitis associated to Papilloma Virus in its parts and components, the analysis of the present contradictions and its dialectical relationships in the secondary health level for its consequent application in the research.

Theoreticians

The Historical-Logical method provided the theoretical systematization during the bibliographic review of the most important aspects and fundamental tendencies in the national and international context, as well as determining the main manifestations of the study.

The empirical methods: Scientific Observation as a basic process in the incidence of Cervicitis associated to Papilloma Virus in the referred entity and the patient's response to treatment, the Documentary Review to obtain the data captured in the Traditional Clinical History, as well as the reports or charge sheets where the incidence of patients and the review of documents are collected.

The Statistical-Mathematical method with which the data were analyzed by means of the SPSS version 21 software for Windows, applying descriptive measures to check the normality of the data, applying Pearson's Chi-Square test (X^2) to determine whether two variables are related or not. A statistical significance level of $p < 0,05$ was proposed. Two-entry contingency tables and graphs were constructed. The results were expressed in absolute numbers and as a summary statistical measure, percentages were used.

An initial colposcopy was performed to confirm the aforementioned diagnosis (HPV-associated cervicitis). Subsequently, an ozone treatment cycle scheme was applied from Monday to Friday, respecting Saturdays and Sundays, which was carried out for four weeks every three months; two treatment cycles were performed, according to protocol.

In the evolutionary consultations, the clinical evaluation of the patients was carried out by colposcopy. Evaluation criteria for the effectiveness of the treatment were determined according to the therapeutic evolution as follows:

Effective: If signs of improvement were detected through colposcopy (if iodine-negative patchy areas improve or are completely eliminated).

Not effective: When the above criteria did not appear.

Adverse reactions were considered as those dependent on a clinical picture compatible with those known during the application of rectal ozone therapy: diarrhea, constipation, vomiting and nausea.

The patients were instructed that for the treatment with Ozone it was necessary to eat breakfast, defecate, as well as to suspend all the antioxidant supplements containing Vitamin C and Vitamin E. The presence of these compounds in high concentrations in the blood interferes with the action of Ozone as an oxidizing agent and therefore the good course of the therapy. In addition to not ingesting excessive amounts of foods that are very rich in these vitamins. Therefore, vitamins or antioxidants should be given before or after the Ozone Therapy, but never during the treatment.

Processing and analysis

They were treated with rectal Ozone Therapy in number of twenty continuous sessions on a daily basis.

For the administration of Ozone:

Dry oxygen and Ozone Therapy equipment were needed, this procedure was performed with Nelaton or aspiration probe number 12, 14, 16 and 18, previous cleaning of the anal area, examination gloves No. 7, water-soluble lubricant and 50 ml syringe were used to aspirate the Ozone from the equipment and administer it in the rectal probe, the dose to be administered was defined as required by the case and the procedure was repeated daily.

In the research carried out, the data obtained were used for strictly scientific purposes and will only be disclosed in scientific events or in scientific publications.

The principles and recommendations for physicians in biomedical research on human subjects adopted by the 18th World Medical Assembly in Helsinki in 1964 and ratified by the 41st World Medical Assembly held in Hong Kong in 1991 were followed in this research.

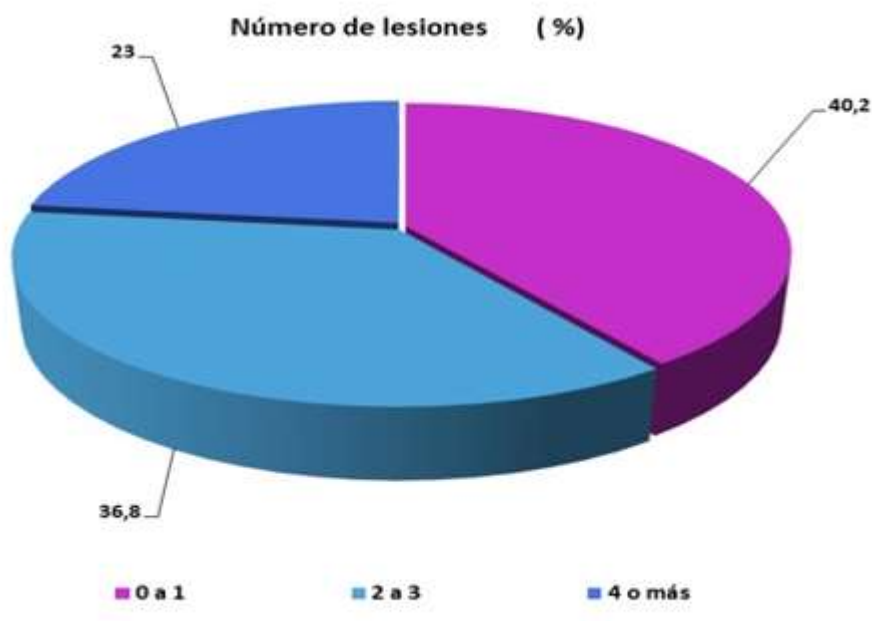
RESULTS

In the sample studied, the age groups 45 years and older predominated, with 27,6 % of the total sample and 23 % with one to three sexual partners, followed by the 35-39 age groups with more than four sexual partners. There were no significant differences in relation to age and number of sexual partners, the $p >$ values being 0,05. Table 1.

Table 1. Distribution of patients according to age group and sexual partners.

Age Groups (years)	Numbers of sexual partners				Total	
	from 1 to 3		4 and over		No.	%
	No.	%	No.	%		
19-24	8	9,2	2	2,3	10	11,5
25-29	9	10,3	6	6,9	15	17,2
30-34	8	3,4	2	2,3	10	11,5
35-39	5	9,2	12	13,8	17	19,5
40-44	4	4,6	7	8,0	11	12,6
45 y más	20	23,0	4	4,6	24	27,6
Total	54	62,1	33	37,9	87	100

The 40,2 % of patients reflect the highest number of lesions characteristic of HPV-associated cervicitis of a lesion. Graph 1.



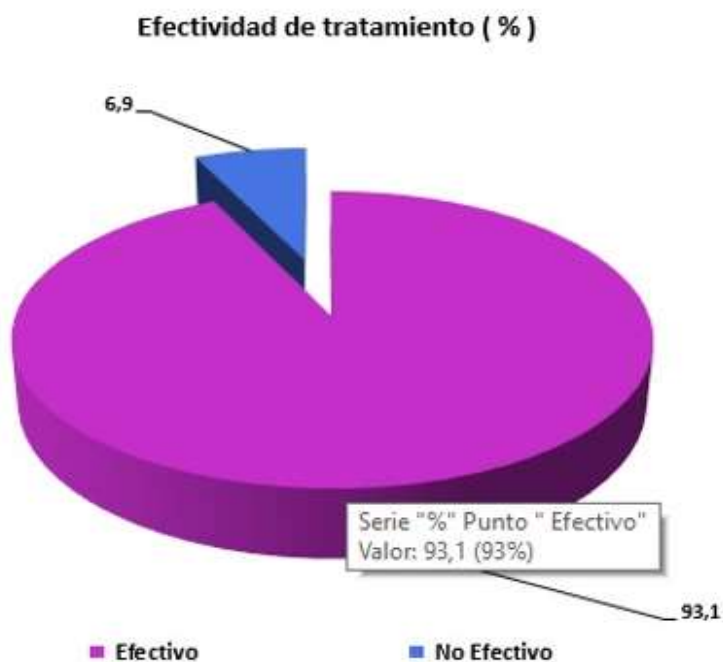
Graph. 1 Lesions present typical of HPV-associated cervicitis before starting treatment with rectal ozone therapy.

A clinical improvement of 31 % was observed after the first course of treatment in patients with one lesion. When the second cycle was applied, improvement prevailed in 9,2 % with one lesion, while 36,8 and 23 % improved clinically with two to three lesions and four and more lesions respectively. Table 2.

Table 2. Clinical improvement in the sample studied in relation to the application of the treatment cycles and the number of initial lesions.

Number of initial injuries	Clinical improvement of treatment				Total	
	First cycle		Second cycle		No.	%
	No.	%	No.	%		
0-1	27	31,0	8	9,2	35	40,2
2-3	0	0	32	36,8	32	36,8
4 and over	0	0	20	23,0	20	23,0
Total	27	31,0	60	69,0	87	100

The effectiveness of treatment with rectal ozone therapy was more frequent in 93,1 % of the patients, while the ineffectiveness of this treatment represented 6,9 % of the sample studied. Graph 2.



Graph. 2 Effectiveness of treatment with rectal ozone therapy for lesions typical of HPV-associated cervicitis

The highest percentage of patients; 85,1 % did not present reactions of undesirable side effects. Similarly, 14,9 % of the patients had undesirable reactions, where diarrhea represented the highest figure with 10,3 %, followed by nausea with 3,4 %. Table 3.

Table 3. Undesirable side effects presented with the application of rectal ozone therapy.

Undesirable side effects	Total	
	No.	%
appeared		
Of them: Diarrhea	9	10,3
Constipation	1	1,1
Nausea	3	3,4
vomiting	0	0
Subtotal	13	14,9
They didn't show up		
Subtotal	74	85,1
Total	87	100

DISCUSSION

In the sample under study, women aged 45 and over predominated, a similar result found in other studies; a study carried out in Spain with ozone intervention in patients diagnosed with HPV shows a prevalence in the age of 47 years.⁽¹⁰⁾ As well as that of a series of cases in the Neck Pathology Clinic of Holguin province with 39,2 % of patients who had two to three sexual partners.⁽¹¹⁾

Results that differ from this research were found in a single-center clinical study in patients with HPV who attended consultation at the Fiorella Clinic, Spain, with the highest frequency in the age of 35 years.⁽¹²⁾ In the state of Aragua, Venezuela, which found in 40 % of the sample the highest infection in the age group of 30 to 36 years, highlighting in 32 % had had eight partners.⁽¹³⁾ The Revista Venezolana de Obstetricia y Ginecología published a study that reported 90,5 % positivity for HPV, with the highest incidence of this pathology in adolescents between 18 and 19 years of age.⁽¹⁴⁾ In the province of Tungurahua, Ecuador, 89 % of the patients studied had had between one and five sexual partners.⁽¹⁵⁾

Crosbie et al,⁽¹⁶⁾ based on a meta-analysis of one million women with normal cervical cytology, estimated that 10,4 % of women worldwide will have HPV in the cervix at some point, a much higher percentage (16,9 %) in women under 25 years of age; HPV infections in women over 30 years of age persist longer than in younger women, being one of the most important human carcinogens.

Studies indicate that sexual behavior is a risk factor for precancerous lesions in the cervix. Among these factors is the number of sexual partners, mainly due to exposure to multiple infectious agents (HPV, Chlamydia trachomatis, Neisseria gonorrhoeae, herpes simplex virus-2) and the effect that the epithelial transformation zone may suffer from these microorganisms.⁽¹⁷⁾

The results found in this study differ from those found in other investigations; in the single-center study, performed by Schwartz in Spain, the number of lesions before performing ozone therapy was given for confirmed CIN I to III.⁽¹²⁾ The patients diagnosed with HPV in the cervix in the Venezuelan study, presented low grade LIE and with non-specific acute inflammation before starting the treatment.⁽¹³⁾

The majority of low-grade lesions can be reversed spontaneously; only a small percentage of them become high-grade lesions, this will be 20 to 40 %, although it is not necessary for there to be progression from low-grade to high-grade lesions because 20 % of high-grade lesions occur for the first time in affected women.⁽¹⁸⁾

In the study carried out by Schwartz, he found in the group treated with ozone the application of 10 sessions of ozone during 10 days, finding clinical improvement after three months of concluding the therapy.⁽¹²⁾ A clinical-epidemiological study of intervention with Ozone in patients diagnosed with HPV carried out a total of 18 sessions per patient, and a protocol of a month and a half in an average of three per week for six weeks, in the course of the treatment (three weeks), 57,1 % showed a satisfactory improvement, changing their diagnosis to acute non-specific inflammation; at the end, the remaining 42,9 % ended up evolving later (six weeks), but in the same way to non-specific acute inflammation with the exception of a single patient (4,8 %) who remained in low grade Lie.⁽¹⁴⁾ similar to the present study which obtained significant improvement with respect to the initial cervicitis at the end of the second cycle (two months of treatment).

A study in the Gynecology Department of the Hospital Dr. Luis Díaz Soto in which 10 treatment sessions were applied in the group of patients treated with Ozone, found a decrease of 59,2 % in the palpable tumor mass after one month of evolution.⁽¹⁹⁾

This shows the correspondence between the treatment and the structural changes of the uterine cervix. For this reason, ozone was used as a therapy that seeks to improve not only the cytological lesion but also to act against the virus due to its germicidal action, specifically antiviral, in addition to its already known action on the unsaturated lipids of the viral envelopes (it can interact with proteins and their constituents (amino acids), and also for its immunomodulatory capacity, capable of stimulating a certain number of cells of the immune system, which can release a small amount of immunostimulatory and immunosuppressive cytokines that are taken up by neighboring cells, keeping the immune system in an alert state, usually without any imbalance between activation and suppression) and anticancer.

Similar results to those achieved in this study are those of other researchers; Schwartz, shows the therapeutic success of Ozone Therapy in the evolution of the treated patients after three months of concluding the therapy with an effectiveness of 80,0 %.⁽¹²⁾ García and Goncalvez,⁽¹³⁾ showed the evidence in the improvement of the infection area until making it inexistent in 95 % of the cases.

The results achieved by Schwartz in his study are stable, being able to be combined with any other therapy without any interference, since it does not present adverse effects⁽¹³⁾. Similar to the result of Garcia and Goncalvez,⁽¹³⁾ in which the inexistent presence of secondary adverse effects to Ozone Therapy demonstrated the efficacy in the treatment in areas of Cervicitis of the uterine cervix. Results that differ from the present study where the minimum of patients presented some adversity.

The side effects were minimal and transitory consisting of Uterine Spasm (intense colicky pain), only in two patients with a duration of less than one hour and instantaneous pain in the puncture area in the patients who received Ozone Therapy treatment with Acute Pelvic Inflammatory Disease.⁽¹⁹⁾

CONCLUSIONS

The results obtained in this study show that ozone therapy is an effective, inexpensive and valid alternative for the treatment of patients with cervicitis associated with Human Papilloma Virus, with prevalence in the group over 45 years of age, in which the number of lesions of cervicitis associated with HPV decreased with the application of ozone, showing a clinical improvement after applying the first and second cycle of treatment, with minimal undesirable side effects.

Conflict of interests

The authors declare that does not exist an interest conflict.

Contribution of the authors

All authors participated in the conceptualization, formal analysis, administration of the project, writing - original draft, writing - revision, editing and approval of the final manuscript.

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Additional material

Additional material to this article can be consulted in its electronic version available at:
www.revcmpinar.sld.cu/index.php/publicaciones/rt/suppFiles/5822

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