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EXPERIENCE REPORT

Use of ozone therapy in the treatment of osteomyelitis in adult

Uso de la ozonoterapia en el tratamiento de la osteomielitis en adulto

Utilização de ozonioterapia no tratamento de osteomielite em adulto

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Abstract

The aim was to present the use of ozone therapy as a treatment for chronic wounds in an adult patient diagnosed with osteomyelitis. This is the report of the experience of nursing care in the treatment of chronic wounds with the use of ozone therapy in a patient diagnosed with osteomyelitis. Six consultations / days of treatment were performed, totaling 28 days of home care, after several therapeutic attempts and hospitalization. It is irrefutable to say that protocols with ozone are effective and inexpensive, making it possible for a large part of the population to have access privately, while it is not available in the public sphere in all units and regions of the country. It is concluded that the treatment has been successful so far with the six consultations carried out, providing the patient with the improvement of the discomfort and complaints, with good evolution of the lesion and moving towards its closure. Certainly, the combined drug and ozone therapy allowed this outcome, as did the professional nurses who performed the assistance.

Descriptors: Ozone Therapy; Wounds; Osteomyelitis; Adult Health; Quality of Life.

Resumén

El objetivo fue presentar el uso de la ozonoterapia como tratamiento de heridas crónicas en un paciente adulto diagnosticado de osteomielitis. Este es el relato de la experiencia de los cuidados de enfermería en el tratamiento de heridas crónicas con el uso de la ozonoterapia en un paciente diagnosticado de osteomielitis. Se realizaron seis consultas / días de tratamiento, totalizando 28 días de atención domiciliaria, tras varios intentos terapéuticos y hospitalización. Es irrefutable decir que los protocolos con ozono son efectivos y económicos, permitiendo que gran parte de la población tenga acceso de forma privada, mientras que no está disponible en la esfera pública en todas las unidades y regiones del país. Se concluye que el tratamiento ha sido exitoso hasta el momento con las seis consultas realizadas, proporcionando al paciente la mejoría de las molestias y quejas, con buena evolución de la lesión y avanzando hacia su cierre. Ciertamente la terapia combinada de medicamentos y ozono permitió este resultado, al igual que las enfermeras profesionales que realizaron la asistencia.

Descriptores: Terapia de Ozono; Heridas; Osteomielitis; Salud de Adultos; Calidad de Vida.

Resumo

Objetivou-se apresentar o uso da ozonioterapia como tratamento de feridas crônicas em paciente adulto com diagnóstico de osteomielite. Trata-se do relato da experiência da assistência de enfermagem no tratamento de feridas crônicas com a utilização da ozonioterapia em paciente diagnosticado com osteomielite. Foram realizadas seis consultas/ dias de tratamento, totalizando 28 dias de acompanhamento domiciliar, após diversas tentativas terapêuticas e hospitalização. É irrefutável dizer de que protocolos com ozônio apresentam-se eficazes e de baixo custo, sendo possível o acesso de grande parte da população de forma privada, enquanto não é disponibilizado no âmbito público em todas as unidades e regiões do país. Conclui-se que o tratamento teve sucesso até o momento com as seis consultas realizadas, proporcionando ao paciente a melhoria dos incômodos e queixas, com boa evolução da lesão e caminhando para seu fechamento. Certamente a terapia combinada de fármacos e ozônio permitiu este desfecho, assim como as profissionais enfermeiras que realizaram a assistência.

Descritores: Ozonioterapia; Feridas; Osteomielite; Saúde do Adulto; Qualidade de Vida.

Introduction

Osteomyelitis is a bone infection of a still unknown protocol for treatment, considering that the world literature is scarce and due to the reaction of each circumstance, each individual, type of involvement, presence of comorbidities, etc. Regarding antibiotic therapy, the correct pharmacological compound or dosage for its treatment is not yet known, and, instead of curing, it may establish risk situations for the patient, as is the case of liver and kidney toxicity. In addition to surgery, it does not guarantee 100% effectiveness[1].

It is important to note that "[...] fungal infections are of low incidence but are non-existent"[2:2]. It presents a great challenge in terms of diagnosis, with the signs and symptoms of fungal osteomyelitis very similar to that of bacterial osteomyelitis, in addition to the fact that there is no way of detecting the fungus responsible for a given infection[2].

In addition to being an obstacle to treatment, osteomyelitis when chronic and with the presence of injuries can become a real challenge for the health professional. Combined therapies are more likely to achieve success and it was based on this premise that a treatment protocol was developed for a patient with chronic osteomyelitis with an open wound in the postoperative period after an in-hospital accident with antibiotics, antifungals, and ozone.

Since ozone is an allotropic oxygen molecule, in gaseous form, it has the power to rapidly dissolve in water, plasma and extracellular fluids; and given solubility guarantees 100% use of the compound, leaving no toxic product for the organism. There are many ways of using ozone in therapies, mainly topical, so it is inferred that:

> "The O_3 reacts, products derived from contact with organic matter cause acute and transient oxidative stress capable of triggering intra and extracellular pathways that lead to positive biological responses. In addition to having direct action on transcription factors that stimulate the production of antioxidant enzymes, O_3 damages the bacterial cell wall and the cytoplasmic membrane, causing a bactericidal, germicidal, fungicidal effect, without triggering resistance mechanisms, in view of these properties. increasingly applied in integrative clinical practice, for both humans and animals"[3:2].

Given the above, the objective was to present the use of ozone therapy as a treatment for chronic wounds in an adult patient diagnosed with osteomyelitis.

Methodology

This is the report of the experience of home care to a patient diagnosed with osteomyelitis and chronic wound 4 months before the start of the service provided. After hospitalization and submission to various therapies, for the reasons mentioned above, ozone therapy was chosen as a form of healing aid and, consequently, promoting quality of life, preventing injuries, and rehabilitating the individual's health.

Respecting the rules and requirements for the elaboration of an experience report, the patient had his individuality and identification preserved, which signed the Informed Consent Form, authorizing the use of clinical information and images of the wound bed in the therapeutic process.

Experience Report

The treatment took place from January 9 to February 7, 2020.

In the first consultation, on January 9, 2020, the patient's history and anamnesis were collected, being: patient C.A.O., male, 34 years old, in a wheelchair for 11 years due to a motorcycle accident. Diagnosed with chronic osteomyelitis (COM) for more than 4 months, on antibiotic therapy with ciprofloxacin for 2 months, being discharged after the medication protocol, according to his attending physician. Vital signs: BP: 120x80 mmHg, HR: 76 bpm, Sat: 98%, T: 36.5 ° C. Conscious, oriented, normotensive afebrile and denies comorbidities and allergies. Presentation of a cavitary lesion in the right gluteus, with an average amount of secretion, bloody appearance, clots in the cavity, without odor, depth of the lesion: 11 x 6.5 x 3.5 cm. She reports that she had surgery and, during treatment at the hospital, had an accident in the postoperative period with the bath chair, which resulted in dehiscence and that, even after 17 days of negative pressure therapy, she had no evolution until the date moment, he complains about "[...] something that pricks inside the injury". Conduct: washing with ozonated water at 40mcg, bagging in place at 40mcg / 20 minutes; filling the cavity with Kerlix © dressing, using ozonized oil in the perilesional region and IR at 20mcg / 120mL.

In the second consultation (Figure 1), on January 14, 2020, the patient presents: BP: 120x80mmHg; HR: 73bpm; Sat: 98%; T: 36.0 ° C; cavitary lesion in the right gluteus, with a medium amount of secretion, without odor, depth of the lesion: 9.0 x 6.0 x 3.5 cm. The patient reports that he no longer feels the sensation of "[...] something pricking inside the lesion". Conduct: washing with ozonized water at 40mcg; bagging on site at 40mcg / 20 minutes; filling of the cavity with gauze, ozonized oil and metronidazole cream was used and the lesion was closed; patient was instructed to change the secondary dressing three times a day; IR was performed at 20mcg / 120mL, without complications. The patient has not yet purchased intramuscular ceftriaxone and metronidazole for topical administration.

In the third consultation, on January 17, January 2020, the patient presented: BP: 110x80mmHg; HR: 77bpm; Sat: 98%, T: 36.3 ° C; cavitary lesion in the right gluteus, with a small amount of secretion, without odor, depth of the lesion: 6.5 x 6.0 x 3.5 cm. The patient has not yet purchased the antibiotic or suggested antifungal. Injury with good evolution. Conduct: washing with ozonized water at 40mcg; bagging on site at 40mcg / 20 minutes; filling of the cavity with gauze, ozonized oil and metronidazole cream was used and the lesion was closed; patient was instructed to change the secondary dressing three times a day and provide medication as soon as possible; IR was performed at 20mcg / 120mL, without complications.

In the fourth consultation, on January 23, 2020, a patient reported having started on January 18, 2020 the 10-

day protocol of ceftriaxone (1g intramuscularly) and metronidazole (400mg topical use), presented: PA: 110x80mmHg, FC: 75bpm, Sat: 97%, T: 36.4 ° C; cavitary lesion in the right gluteus, without secretion - only with ozonized oil residues -, without odor, depth of the lesion: 6.0 x 6.0 x 3.0 cm. Using antibiotic and antifungal, lesion with good evolution. Conduct: washing with ozonized water at 40mcg; bagging on site at 40mcg / 20 minutes; filling of the cavity with gauze, ozonized oil and occlusion was used; IR was performed at 20mcg / 120mL, without complications. The patient was instructed to intercalate, one day only to use metronidazole cream and, on the other, only ozonized oil: in addition to changing the secondary dressing two to three times a day, due to the overflow oil to the secondary dressing.

Figure 1. Record of the second consultation. Itapetininga, SP, Brazil, 2020

Source: Personal archive, 2020.

In the fifth consultation, on January 31, 2020, the patient presented: BP: 120x80mmHg; HR: 77bpm; Sat: 98%; T: 36.2 ° C; cavitary lesion in the right gluteal region, without secretion - only with ozonized oil residues -, without odor, depth of the lesion: 5.5 x 3.5 x 2.5 cm. The antibiotic therapy protocol was finalized. Injury with good evolution. Conduct: washing with ozonized water at 40mcg; bagging on site at 40mcg / 20 minutes; filling of the cavity with gauze, ozonized oil and occlusion was used; IR was performed at 20mcg / 120mL, without complications.

Figure 2. Record of the sixth consultation. Itapetininga, SP, Brazil, 2020

Source: Personal archive, 2020.

In the sixth consultation (Figure 2), on February 7, 2020, the patient had: BP: 110x80mmHg; HR: 80bpm; Sat: 98%, T: 36.3 ° C; cavitary lesion in the right gluteus, without secretion - only with ozonized oil residues -, without odor, depth of the lesion: 4.5 x 3.0 x 2.0 cm. Injury with good evolution. Same conduct as the previous consultation.

Discussion

It is irrefutable to say that protocols with ozone are effective and inexpensive, making it possible for a large part of the population to have access privately, while it is not available in the public sphere in all units and regions of the country.

Most of the little existing literature currently exists in Veterinary Medicine, being the first step towards the study of solutions and chemical compounds, in tests on laboratory animals, as is the case of rats. Study[4], published in 2021, it aimed to investigate ozonized solutions and their relationship with tissue repair in rats. The researchers involved found that ozonized water has the power to retract the wound, helping with cell and tissue maturation; ozonized oil, on the other hand, allows for greater neovascularization and deposition of type I collagen. For a better interpretation, it is necessary to assess that ozonized water and oil were effective, but the wound was intentionally made for the study, with no bacterial or fungal, and it is an experimental study.

Already in study with human beings[5], In the case of a case study with a patient with a diabetic foot wound, it was observed that, after the surgical procedure (revascularization and debridement), a protocol was performed: hydro-ozone therapy (immersion in ozonized water), bagging (gas mixture of O_3 and O_2) and dressing with sunflower oil and ozonized cream; resulting in reduced secretion, tissue repair and pain relief, and complete wound closure took place in 90 days.

However, it should be noted that the effectiveness of a treatment is not related to just one aspect, but to a set of factors. In this case of patient C.A.O., it was possible to achieve success through intramuscular and topical medications, ozone therapy, treatment adherence, correct management guidelines - especially in hygiene -, a qualified and trained professional in the chosen therapy; having adulthood as a factor for treatment, considering that osteomyelitis in children presents a much greater challenge, considering the need for bone maturation[1].

Final Considerations

It is concluded that the treatment has been successful so far with the six consultations carried out, providing the patient with the improvement of the discomfort and complaints, with good evolution of the lesion and moving towards its closure. Certainly, the combined drug and ozone therapy allowed this outcome, as did the professional nurses who performed the assistance.

Given the scarcity of literature on osteomyelitis treatment, especially when ozone therapy is included, there is a growing field in which, certainly, by nursing assisting the patient full time, it becomes the main protagonist of this

service, providing even greater subsidies for nursing autonomy, especially for nurses, and show that nurses are extremely capable and develop protocols, plan and carry out interventions and achieve success with therapies and technologies that are new in the field of care and Science as a whole.

It is expected that this study will contribute to the awakening of health professionals, especially nursing professionals, for this area that still has a lot to develop and generate quality of life for patients who struggle for months and years with chronic wounds.

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