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Review

RESOLUTION OF A CASE OF PES ANSERINE BURSITIS WITH US-GUIDED INTRABURSAL INFILTRATION OF OXYGEN-OZONE AND MRI CHECK

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ABSTRACT

The author presents the case of a patient affected by pes anserine bursitis completely resolved thanks to treatment with oxygen-ozone therapy. The complete recovery was confirmed by the control with Magnetic Resonance one month after the treatment. The imaging-guided intra-bursal injection of the oxygen-ozone gas mixture can therefore be considered a valid therapeutic alternative in the treatment of inflammatory and overload joint pathology; it is a simple method, with low costs and without significant side effects.

KEYWORDS: *pes anserinus, anserine syndrome, ozone, pes anserine bursitis, oxygen*

INTRODUCTION

Pes anserine bursitis is part of the large group of so-called overload diseases. The inflammatory process affects the bursa's anatomy of the goose paw (sartorius, gracilis, and semitendinosus tendons). The treatment of pes anserine bursitis finds as the first therapy the suspension of the activity that caused the inflammation, then uses not particularly aggressive therapies such as anti-inflammatory drugs, cryotherapy (for periods of 15 min), ultrasound physiotherapy, tecar therapy, strengthening of the quadriceps muscles, stretching of the internal flexor and rotator muscles of the knee. Oxygen-ozone therapy can be a valid and effective alternative in the resolution of the inflammatory process of pes anserine bursitis. In addition, the infiltration of the gas mixture directly into the bag, thanks to ultrasound control, allows the anti-edema, and anti-inflammatory effect of ozone (1, 2).

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Clinical Case

A 41-year-old male amateur basketball player underwent arthroscopic surgery for a medial meniscectomy in January 2016. In March, he came to our attention complaining of pain on the inside of the knee. The pain increased with movements, while a state of rest relieved the symptoms. Physical activity exacerbated the symptoms, and the pain was evoked by pressure palpation in the affected area. Following the poor results obtained after the targeted physical therapies and the administration of anti-inflammatory drugs, he did a magnetic resonance imaging of the knee (3) (Fig. 1).

MATERIALS AND METHODS

MRI before and after treatment was performed with Siemens Magnetom Simphony high-field (1.5 tesla) equipment. Sagittal scans of 3 mm with FSE, T1 weighted sequences (TR 554 and TE 12; Fov 188x188) and sagittal, coronal, and axial scans with DP fat sat sequences of 3 mm, (TR3300 and TE 12; Fov 188x188) were performed.

The infiltration of the bursa took place under ultrasound guidance using the GE E9 ultrasound system with a 16 Mhz high-frequency linear probe.

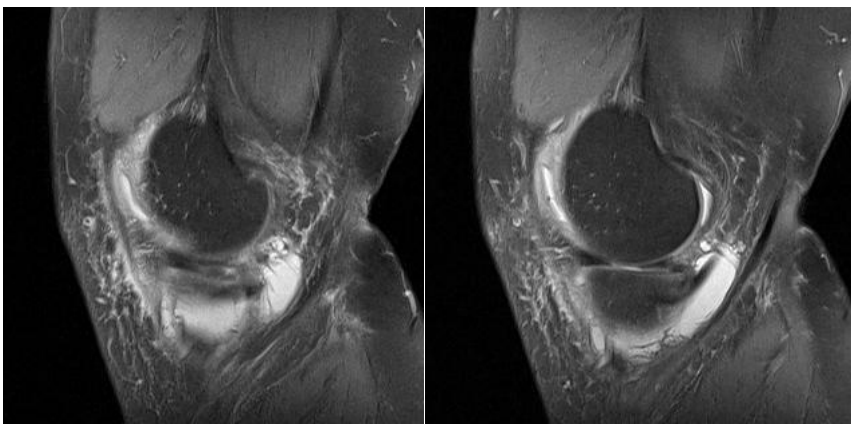

Fig 1. *A-B): Knee MRI (March, 2016).*

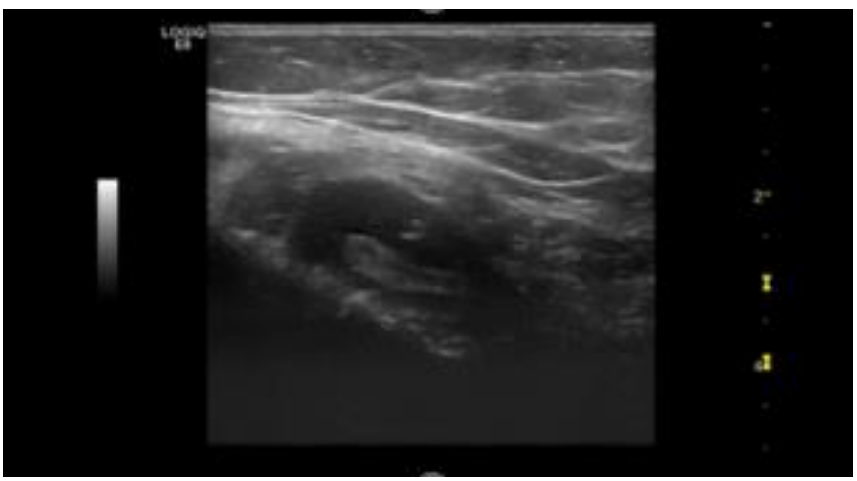

Fig 2. *After being sure of the penetration of the tip of the needle inside the bursa that surrounds the sartorius, gracile and semitendinosus tendons, thanks to the ultrasound visualization, the bursa was infiltrated with 10 cc of oxygen-ozone mixture at a percentage of 15 μg/ml. The procedure correctly performed did not cause side effects to the patient.*

The oxygen-ozone mixture was produced with Multiossigen Medical 99 IR equipment with a photometric ozone concentration detector, certified according to Legislative Decree 46/97, EEC Directive 93/42 in class 2°. For the infiltration of the bursa, a 22-gauge needle, 4 cm long, under ultrasound control, was used (Fig. 2, 3).

RESULTS

Magnetic resonance imaging revealed a hypoplastic medial meniscus in relation to the previous meniscectomy without fissures of the meniscal residue; it also showed the absence of fissures in the external meniscal fibrocartilage and continuous and regular thickness of the cruciate ligaments and collaterals. Marked fluid collection, polylobed, between the gracilis, semitendinosus, and sartorius tendons in relation to bursitis of the "goose paw" structures. In relation to the marked bursitis of the goose paw tendons, the infiltration of an oxygen-ozone mixture under ultrasound control was proposed to the subject.

The patient, invited to come for control one week after the infiltration, reported the improvement of the painful and functional symptoms in the knee. An ultrasound check was carried out, which demonstrated the reduction but not complete resolution of the inflammatory-reactive picture of the goose leg tendon bag. Based on the ultrasound findings, infiltration was carried out under ultrasound control with administration in the bag of 10 ccs of an oxygen-ozone mixture at a percentage of 15 µg/ml, seven, fourteen, and 21 days after the first procedure.

When checking the clinical evolution, performed 30 days after the first infiltration, the subject reported the complete remission of painful symptoms focused on the inner side of the knee at the common insertion of the sartorius, gracilis, and semitendinosus muscles. The knee MRI was performed.

Thirty days later, the magnetic resonance investigation showed the complete resolution of the fluid distension of the goose paw tendon bag (Fig. 4).

DISCUSSION

Pes anserine bursitis is part of the large group of so-called overload diseases. The overload of the muscles that are part of the anatomical complexity of the goose paw (sartorius, gracilis, and semitendinosus) is the cause of the inflammatory process that affects the anserine bursa; the etiology is to be found in mechanical factors, but sometimes the symptoms are linked to a strong inflammation of a contiguous structure which later also involves the bursa (4).

The disease is related to the scarce elasticity of the three muscles mentioned above. Due to the lack of this elasticity,

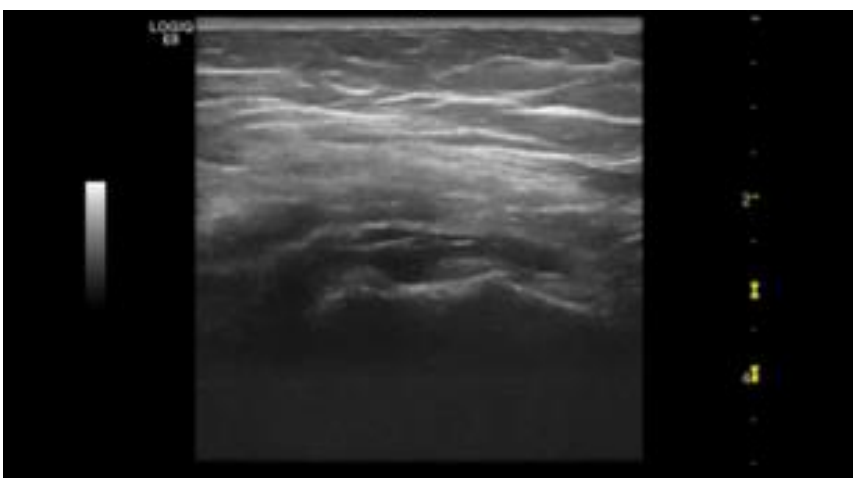

Fig 3. *The immediate ultrasound check showed the spreading, inside the bursa, of the oxygen-ozone mixture and the immediate volumetric reduction of the bursal fluid component.*

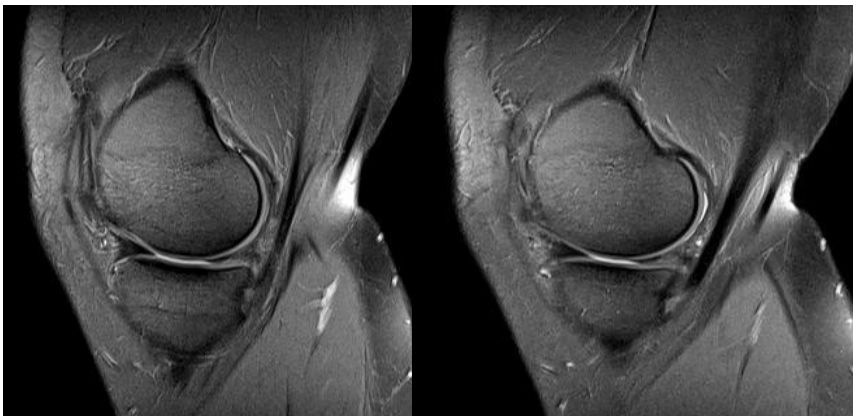

Fig 4. *Knee MRI (April, 2016)*

part of the work done during walking by the Vastus medialis muscle (one of the anterior thigh muscles) is transferred to the sartorius, the gracilis, and the semitendinosus muscles; the overload causes excessive tension of the tendon structure common to the three muscles; this results in friction against the underlying structures which causes the anserine bursa inflammation

Most affected by goose leg bursitis are, on the one hand, people who perform regular physical activity (5) (both amateurs and professionals), and on the other older people suffering from gonarthrosis or coxarthrosis (6).

The main symptom of pes anserine bursitis is pain localized inside the knee; pain, generally exacerbated by movements and relieved by rest, can appear both during physical activity or be evoked by pressure palpation in the affected area (4).

The treatment of pes anserine bursitis finds as the first-line therapy the suspension of the activity that caused inflammation. Second-line therapies are anti-inflammatory drugs, cryotherapy (for periods of 15 minutes), ultrasound physiotherapy, tecar, strengthening of the quadriceps muscles, and stretching of the internal flexor and rotator muscles of the knee.

CONCLUSION

Our work has shown how oxygen-ozone therapy can find an important role in the treatment of the inflammatory process of the goose paw bursa.

Thanks to ultrasound control, the ability to infiltrate the gas mixture directly into the bag allows to achieve the optimal anti-edema effect of ozone and effectively activates the mechanisms of anti-inflammatory response (7).

The imaging-guided intra-bursal injection of the oxygen-ozone gas mixture can therefore be considered a valid therapeutic alternative in the treatment of inflammatory and overload joint pathology; it is a simple method with low costs and without significant side effects or contraindications.

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Conflict of Interest

The authors declare no conflict of interest.

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