Abstract

Introduction: Ocular ultrasonography has been an important imaging method to assess the vitreous humor inflammatory process in patients with arthritis. The aim of this study was to evaluate the use of ultrasound in monitoring eye and joint treatment with golimumab.

Materials and Methods: This clinical case included a 52-year-old caucasian male patient diagnosed with peripheral spondyloarthritis. The patient reported a bilateral visual blurring, a little photophobia, no red eyes, along with blockage of the left and right elbows for 1 month, treatment failure with synthetic disease-modifying drugs, then started treatment with golimumab. Ultrasonography with a 12 MHz high frequency linear probe was used to assess the eye and a frequency of 15 to 18 MHz for the evaluation of the joints.

Outcome: The patient showed improvement in the gray scale (GS) and in the clinical evaluation of both eyes and elbows, in 2 and 7 months, assessed at 7 months by ultrasound monitoring.

Conclusion: Ultrasonography demonstrated improvement, in a short time, in the inflammatory changes in the eyeball and joint, with the use of golimumab.

Keywords: Golimumab Ultrasound; uveitis; arthritis.

Introduction

The high resolution ultrasound in arthritis has been shown to be a tool with excellent accuracy in the assessment of the inflammatory process, but it is also useful in mapping other structures with tissue damage in these patients, such as in the detection of acute and chronic ocular inflammatory process, which may be obscured by the clinical manifestations of this noble organ in the several inflammatory arthropathies. Ocular ultrasound can be a useful method to be validated in these diseases, being increasingly used by ophthalmologists in other situations, such as detachment of the vitreous humor, hemorrhages, tumor lesions, etc [1]. Ulcerative colitis reflects inflammatory systemic tissue damage, often insidious, and occurs mainly in young people with arthritis, and may go unnoticed in certain situations. The ultrasonography can show dynamic images with well defined resolution of the anterior uvea, as well as the presence of findings such as vitreous humor exudate, late cystoid macular edema, characterizing findings for the diagnosis of intermediate uveitis, which are often difficult to assess on examination. Clinical ophthalmology, because in situations that cause opacification of the light-conducting environment, which may not reveal the visualization of the posterior segment of the eyeball, the B-mode ultrasound can help in the detection of vitritis [1-3]. Some qualified professionals with proper training can perform the ocular ultrasound using a systematic assessment protocol. Computed tomography and magnetic resonance imaging can be useful in a variety of eye diseases, but they are unable to digitize ocular structures in real time and have a limited role in the assessment of vitreous humor, retina and choroid [4].

In spondyloarthritis, the inflammatory involvement of previous uveitis is more frequent, but there is also the involvement of intermediate uveitis and the degree of topographical uveal involvement varies according to the types of these inflammatory arthropathies. In our clinical practice, we detected many ecography changes of vitritis in patients with psoriatic arthritis.
and axial and peripheral spondyloarthritides. In the joint with exudative synovitis, it can show a wide variety of cytokines, as well as this can occur in anterior and intermediate uveitis [5]. There is a case in the literature of treatment with certulizumab, a biological drug composed of a humanized Fab’ fragment of anti-TNF-alpha monoclonal antibody conjugated with two polyethylene glycol molecules – PEG., in ocular and joint monitoring in a patient with axial spondyloarthritis [6]. The aim of this study was to map the follow-up of treatment with another anti-TNF-alpha mechanism of action, a humanized monoclonal autoantibody, denominated golimumab, through clinical and ultrasound examinations of the eyes and joints, using a high-frequency linear probe, in a patient with peripheral spondyloarthritis.

Materials and Methods

Patients, clinical and laboratory characteristics and physical examination

This is the case of a 52-year-old white patient, on watch, without a previous diagnosis. The patient reported a chronic history of hip pain with an inflammatory rhythm and a significant morning stiffness, evolving to a prosthesis, without having low back pain at any time. He had been complaining of pain and blockage of the left and right elbows for 1 month, but without clinical signs of arthritis. Magnetic resonance imaging of the current hip showed marked effusion on the left, synovitis and erosive osteodegenerative process, insertional tendinopathy and peritendinousopathy of the tendons of the gluteus medius and minimus, with a small liquid distension of their respective bursas; entheseophytes in the greater trochanter and mild trochanteric bursitis, without the radiographic sacroiliitis changes. The patient reported bilateral visual blurring, a little photophobia, currently no red eyes and no floaters. Clinical ophthalmologic evaluation, without detecting inflammation, but glasses were indicated. He reported no changes: cutaneous, nails and intestinal. Clinical assessment of follow-up was performed using the visual analogue scale (VAS); disease activity score of 28 joints by the Clinical Disease Activity Index (CDAI) [7]. The laboratory tests presented by the patient in the baseline visit were: rheumatoid factor negative; 5.9 mg/dl uric acid; 13 mm erythrocyte sedimentation rate; serologies of the hepatitis B, C, HIV, syphilis and Mantoux test were negatives and no changes in the chest X-ray.

Ultrasound evaluation

The patient signed an informed consent form at the Rheumatology Ultrasound Clinic in Campinas, São Paulo State. Patient’s ultrasound evaluation was performed by a single rheumatologist with 13 years exams’ experience. A MyLab 25 Gold ultrasound (EsaoteSpA, São Paulo, Brazil) with a 12 MHz high frequency linear probe was used to assess the eyes and a frequency of 15 to 18 MHz for joint investigation, with a power Doppler frequency of 6.6 to 8 MHz, pulse repetition frequency ranging from 0.5 Hz to 1.0 MHz and low filter. The ocular ultrasound evaluation was performed with the patient’s eyes closed, covered with a large amount of gel and without putting pressure on the ocular structures; the patient was asked to move the eyes laterally, medially, down and up; the probe was positioned longitudinally and transversely to the eyelids. All joint images were performed using grayscale and power Doppler techniques to detect ecostructural damage, following ultrasound guidelines by the Outcome Measures in Rheumatology (OMERACT) study group for musculoskeletal assessment [8]. Ultrasonography of eyes and joints was performed at baseline and after 7 months treatment; the clinical joint evaluation was performed after 2 months and 7 months treatment.

Results

The patient used synthetic disease-modifying drugs for 6 months, showed no improvement and much epigastric pain. After starting the immunobiological, he no longer presented visual blurring or photophobia, there was also an important improvement in clinical metrics by CDAI, after 2 and 7 months of treatment, in regard to pain in the hip and absence of blockage in the elbows (Table 1). Ultrasonography showed a significant reduction in hypoechoic images floating in the vitreous chamber of the left and right eyes (Figure 1), associate with improvement of exudative synovitis in the left anterior recess and in the right posterior recess of the elbow, after 7 months of treatment, respectively (Figure 2).

Table 1: Clinical evaluation before and after treatment.

<table>
<thead>
<tr>
<th>Drug treatment</th>
<th>CDAI (degree of activity indices)</th>
</tr>
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<tbody>
<tr>
<td>Methotrexate 15 mg / Sulfasalazine 2g / 6 months</td>
<td>28 (high)</td>
</tr>
<tr>
<td>Golimumab/2 months</td>
<td>8 (low)</td>
</tr>
<tr>
<td>Golimumab/7 months</td>
<td>2 (remission)</td>
</tr>
</tbody>
</table>

Legend: CDAI: Clinical Disease Activity Index.

Figure 1: Right and left ocular ultrasound showing evaluation of golimumab treatment, respectively: A and C. Important inflammatory process (arrows); B and D: Important improvement of the vitreitis (arrows).
In the literature regarding peripheral manifestations of spondyloarthritis, the ASAS-COMOSPA group reports a frequency of 64% of these clinical manifestations, with a prevalence of 51.5%, 37.8% and 15.6% for peripheral arthritis, enthesitis peripheral and dactylitis, respectively. The presence of any of these symptoms was associated with the highest clinical score reported by the patient, as also observed in our patient, being more related to the presence of synovitis of the elbows and hips, along with eyes changes [9,10]. Anterior uveitis is a systemic involvement that may be associated with spondyloarthritis, but the presence of intermediary uveitis and its true meaning, especially in relation to the association of joint inflammatory activity, is still not well understood.

There are studies with humanized monoclonal anti-TNF, featuring an improvement in uveal flares in these patients, and golimumab has been approved for the treatment of patients with spondyloarthritis and especially those with uveitis. One study demonstrated that golimumab decreased the rate of uveitis from 11.1 to 2.2 per 100 patient-years. In this patient, clinical and image improvement was observed through the reduction of vitritis echographic findings [11,12]. Ocular ultrasound assessment is a future method that can dynamically aggregate the assessment of acute and chronic ocular inflammatory processes, such as vitreitis, but there are no studies with a considerable number of patients evaluating these cases with this systemic manifestation, combined with active inflammatory arthropathy.

Inflammatory cell count in the ophthalmological exam is subjective, optical coherence tomography may be a promising proposal in the future, but there is great difficulty in accessing this method. Linear probe ultrasound can help to value the chronic ocular inflammatory process, along with the maintenance of joint inflammatory activity, as this detection can improve performance when choosing a more complex, adequate and safe treatment.

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**References**


