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Ultrasound-integrated tight control in early psoriatic arthritis during adalimumab treatment

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ABSTRACT

Psoriatic arthritis (PsA) is a multi-faceted disease, challenging the rheumatologist both for its complex diagnostic and therapeutic aspects. The efficacy of TNF-blockers treatment might be verified by the new imaging devices such as ultrasonography (US) that has a great impact on the tight control during follow-up. Otherwise, specific guidelines for the routine use of US in PsA are still not well defined and often the management of the disease is based only on the evidence-based experience of clinicians. In a young patient affected by early PsA, we describe the rapid and sustained remission of the disease after adalimumab treatment, accompanied by the healing of synovitis and erosion, underlining the importance of early aggressive therapy and the positive role of US tight control in the follow-up period.

Introduction

Psoriatic arthritis (PsA) is a complex disease, often representing a challenge for the clinician, both for its diagnostic and therapeutic aspects (1). Early treatment with anti-TNF-α is mandatory in order to achieve the inhibition of radiographic progression (2-4). Ultrasonography (US) is an essential tool for early diagnosis of PsA (5) and for tight control of therapy, but accepted guidelines focused on the new imaging techniques follow-up are still under investigation (6).

In this case, we describe the rapid and sustained remission of the disease and healing of synovitis and erosion in a patient affected by early PsA after adalimumab (ADA) treatment, demonstrated by a US tight control during two and a half years of follow-up.

Case report

In March 2009, a 31-year-old Caucasian man was admitted to our Outpatients Clinic complaining of inflammatory pain on wrists and hands (pain VAS 10/10, morning stiffness of 90 minutes, Health Assessment Questionnaire modified for SpA [S-HAQ] 1.12/3, BASDAI 5.4/10, hospital depression and anxiety score 8/21) and dactylitis of the second finger of the right hand, over the past 3 months. Familial and personal past medical history were positive for psoriasis. Clinical examination revealed only bilateral arthritis of wrists (without any pain at other joints, lower limbs entheses and sacroiliac joints) and very mild skin disease with a Psoriasis Area and Severity Index (PASI) score of 0.3. Laboratory findings showed: erythrocyte sedimentation rate (ESR) of 35 mm/h (normal level, n.l. <25), C-reactive protein (CRP) levels of 4.5 mg/dL (n.l.<0.5), and anti-citrullinated peptides antibodies (ACPA) titers of 14 U/mL (n.l. <5). Tests for anti-ANA, anti-ENA and HLA-B27 were negative.

Diagnosis of early PsA was made according to the Classification Criteria for Psoriatic Arthritis (CASPAR) (7).

US bilateral examination (performed both longitudinally and transversally) of radiocarpal, intercarpal, metacarpophalangeal (MCP) and interphalangeal joints was performed by an experienced sonographer (BF), using the MyLab 70 XVG (Esaote Biomedica Genoa, Italy) equipped by a 15 MHz broadband multifrequency linear transducer and Power Doppler (PD) with pulse repetition frequency of 1 kHz and gain of 50–53 dB. Vascularisation was semi-quantitatively scored: no flow signal (grade 0), mild-single vessel signal (grade 1); moderate-confluent vessels involving less than half of the synovium area (grade 2); severe-several vessels involving more than half of the synovium area (grade 3) (8). The scan revealed PD (grade 3) bilateral positive synovitis at radiocarpal, intercarpal and 3rd MCP joints and bilateral subcutaneous PD signal surrounding the flexor digitorum tendons at 2nd and 3rd finger. The US examination excluded erosive disease. Because of the involvement of several joints and due to the lack of compliance of patients, no steroid injection was performed.

A whole body bone scintigraphy with Technetium 99 scan showed multiple increased uptakes in the same areas involved in the wrists and hands. A plain x-ray study of the hands showed no significant bone abnormalities typical of PsA, including periostitis and marginal bone erosion.

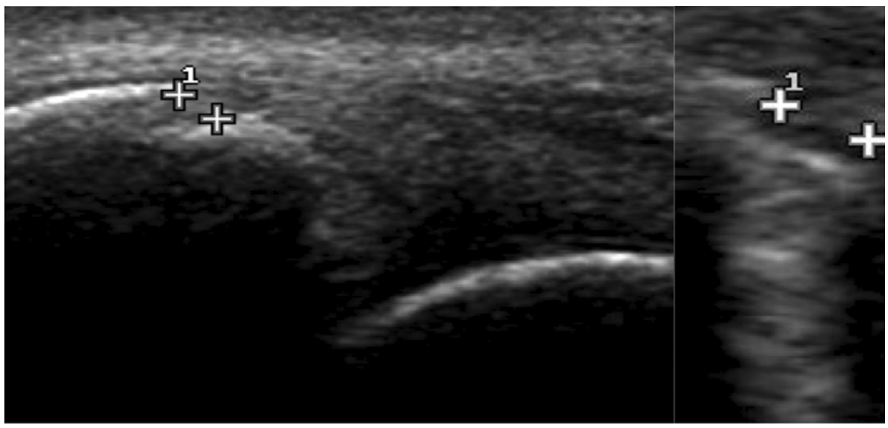

Fig. 1. Micro-erosion at the second right MCP joint (dorsal longitudinal and transversal scans) after withdrawal of ADA, in an early PsA patient (22.02.2010).

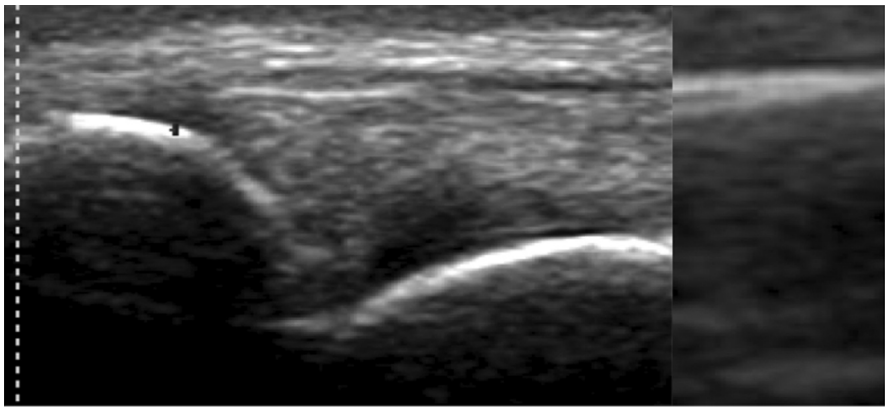

Fig. 2. Healing of the erosion of the second right, in the same patient (dorsal longitudinal and transversal scans), after three months of reintroduction of ADA treatment (25.05.2010).

Treatment with oral metylprednisolone (4 mg/day) and intramuscular methotrexate (10 mg/wk) without oral folate supplementation was prescribed and the patient was followed up every 3 months with clinical, laboratory and US examinations in order to evaluate disease activity.

Despite the increase of methotrexate dosage (15 mg weekly), pain and swelling of wrists and elevation of CRP (1.6 mg/dl) persisted. Therefore, in accordance with the Italian Society of Rheumatology recommendations on biologic treatment (4), and after the standard screening procedures for anti-TNF-α therapy, in June 2009, adalimumab (ADA) (40 mg subcutaneous every two weeks) was started, leading to a rapid improvement of clinical, laboratory and US markers of joint, tendon and skin disease. In July 2009, CRP levels, clinical examination and questionnaires were all negative; US showed only a mild synovitis (PD grade 1) at bilateral inter-carpal joints but no erosions and no subcutaneous PD signal. Metylprednisolone was suspended and later, in November 2009, also MTX was eliminated, with a successive clinical and US examination (completely negative for PD and erosion) showing good control of disease activity on ADA-monotherapy. However, subsequently, ADA was suspended due to flu-like symptoms. In February 2010, 2 months after ADA discontinuation, because of a disease flare of dactylitis in the second finger of the right hand, the patient underwent a new US examination which detected diffuse subcutaneous PD signal at the 2nd and 3rd digit and active radio- and inter-carpal synovitis; moreover, a microerosion (0.11 cm) of the second right phalanx head of MCP joint was clearly observed (Fig. 1). Laboratory findings (ESR and CRP) and joint count were negative.

ADA was promptly reintroduced: dactylitis progressively resolved. After 3 months (May 2010), at US examination, PD signal was completely negative and, morever, the bone erosion damage, previously recorded, was repaired (Fig. 2). ADA-monotherapy was maintained to the current date without any dose-adjustment or any adverse effect. The patients undergoes a tight control of clinical, serological and US examination every six months which have still remained negative after two and a half years of treatment. Also traditional radiography did not show any erosions at follow-up.

Discussion

Although new diagnostic criteria have recently been defined (7), the diagnosis of PsA is still difficult. In our case, the patient also presented ACPA which is rarely found in PsA erosive arthritis (9).

Therapeutic strategies in similar-rheumatoid PsA are still often empirical and derived from the experience on Rheumatoid Arthritis (RA). At present, only TNF blockers have proved to be efficacious in treating all clinical aspects of PsA and, according to the latest guidelines, are recommended in the early phase (6). In our case, the combination of early diagnosis and treatment with US-follow up has been effective in improving joint disease.

Recent studies in RA showed the importance of a "treat-to-target" strategy combined with tight control to obtain early remission of the disease (10, 11). Furthermore, the role of US in the diagnosis and follow-up of patients has been highlighted in several studies, because US is more sensitive than x-rays and allows the detection of synovial activity with PD (12). However, even if the role of US in early PsA has recently been described (5), the impact of these findings in daily clinical practice still need to be defined (13). Combined with clinical aspects, US had a pivotal role in differential diagnosis and led us to start ADA. Finally, US helped to detect early relapse of the disease during a temporary suspension of ADA with rapid repair on reintroduction of biologic drugs.

Furthermore, only few reports have demonstrated that early TNF blockers lead to erosion healing in RA (14) and in PsA (15), as shown in our study.

A limitation of our case is that US was not supported by other more sensitive imaging techniques (*i.e.* CT or MRI), to demonstrate bone damage. Despite the fact that US is a very powerful method for studying bone erosions during arthritis, to date, it is not considered the gold standard. In our case, only radiography follow-up confirmed the lack of radiological progression, even though less sensitive than US. However, this report is paradigmatic in underlining the importance of ADA and US tight follow-up in controlling PsA activity, especially in early phases in which clinical examination might underestimate the disease activity (5). Further studies are needed in order to confirm the importance of treat-to-target strategy in PsA and its role in daily practice.

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