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CASE REPORT

Rheumatoid Arthritis: A Case Study

Artritis reumatoide: Un estudio de caso

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Abstract

Introduction: Rheumatoid Arthritis, is an autoimmune and inflammatory disease. NSAIDs are the most commonly used drugs in reducing pain while Glucocorticoids used especially in acute cases. Over the last 3 decades, five different TNF-α inhibitors have been administered: infliximab, etanercept, adalimumab, golimumab, and certolizumab-pegol for RA treatment. This case study provides further evidence that changes in treatment modalities for RA management leads to a significant improvement in disease activity in patients with severe disease.

Case Report: We present a 44 years old female, diagnosed for the first time with RA in 2008. In consultation with the staff, the doctors decided to start treatment with Golimumab and MTX in 2021. The assessment of the ACR coefficient is with improvement in ACR20.

Conclusion: The use of Golimumab with MTX reduces clinical signs and symptoms in patients with AR, thereby improving both qualities of life and pain relief.

Key words: Rheumatoid Arthritis, golimumab, treatment.

Resumen

Introducción: La Artritis Reumatoide, es una enfermedad autoinmune e inflamatoria. Los AINE son los fármacos más utilizados para reducir el dolor, mientras que los glucocorticoides se emplean sobre todo en los casos agudos. En las últimas 3 décadas, se han administrado cinco inhibidores del TNF-α diferentes: infliximab, etanercept, adalimumab, golimumab y certolizumab-pegol para el tratamiento de la AR. Este estudio de caso proporciona una prueba más de que los cambios en las modalidades de tratamiento para el manejo de la AR conducen a una mejora significativa de la actividad de la enfermedad en pacientes con enfermedad grave.

Informe de un caso: Presentamos a una mujer de 44 años, diagnosticada por primera vez de AR en 2008. En consulta con el personal, los médicos decidieron iniciar el tratamiento con Golimumab y MTX en 2021. La evaluación del coeficiente ACR es con mejoría en el ACR20.

Conclusión: El uso de Golimumab con MTX reduce los signos y síntomas clínicos en los pacientes con AR, mejorando así tanto la calidad de vida como el alivio del dolor.

Palabras clave: Artritis reumatoide, golimumab, tratamiento.

Introduction

According to "The Center for Disease Control and Prevention" Rheumatoid arthritis (RA) is an autoimmune and inflammatory disease, which means that the immune system attacks healthy cells in the body by mistake, causing inflammation (painful swelling) in the affected parts of the body[1]. RA mainly attacks the joints in the hands, wrists, and knees, and usually affects many joints at once. In a joint with RA, the lining of the joint becomes inflamed, causing damage to joint tissue. This tissue damage can cause long-lasting or chronic pain, unsteadiness (lack of balance), and deformity (misshapenness). RA can also affect other tissues throughout the body and cause problems in organs such as the lungs, heart, and eyes[2]. The total average prevalence of this disease in the world is about 1%, while in Mediterranean countries is 0.36%. It is more prevalent in women than men and is three to four times more common in men[3]. RA clinic is different among patients. In some patients, it appears with the onset of early signs such as fatigue, weakness, anorexia,

and late synovium or accompanying musculoskeletal symptoms[4]. The diagnosis of RA is mainly clinical[4], and is made by evaluating clinical signs lasting 1-2 years, with symmetrical synovitis, morning stiffness, or subcutaneous nodules. Laboratory procedures examine the joint fluid and evaluate the rheumatoid factor, while radiographs often show bone and cartilage damage[5]. The treatment of RA has been increasingly developed in recent years, although no treatment has yet been discovered that would give the patient the final solution to RA. The most commonly used drugs are NSAIDs, Glucocorticoids, and corticosteroids. Furthermore, specialists nowadays are also prescribing disease-modifying antirheumatic drugs (DMARDs) for most patients. Hydroxychloroquine, minocycline, and sulfasalazine are commonly prescribed for patients with mild to moderate disease or in combination with other medications. Cyclophosphamide is used in very severe cases, while Leflunomide is widely used in moderate to severe RA[4,6]. Over the last 3 decades, RA treatment has been administered with five different TNF-α inhibitors such as infliximab, etanercept, adalimumab, golimumab, and certolizumab-pegol. Hereby we describe a case of a middle-aged woman having a complicated RA. This case study provides further evidence that changes in treatment modalities for RA management leads to a significant improvement in disease activity in patients with severe disease.

Case report

Patients information

This case study presents a female patient, currently 44 years old, diagnosed with RA firstly in 2008. Thus, the following parameters were collected at study entry: age, comorbidity (other chronic diseases requiring long-term medical care), disease duration, patient's assessment of pain, number of swollen and tender joints, extra-articular manifestations, and also the functional status evaluated by an adapted version of Health Assessment Questionnaire (HAQ)[7]. Furthermore, we evaluated some of the laboratory finding such as erythrocyte sedimentation rate (ESR), C reactive protein (CRP) level, rheumatoid factor (RF) positivity, Anti-citrullinated protein/peptide antibodies (ACPA) positivity using second-generation anti-CCP assay (CCP2), plus anti-double-stranded DNA antibody (anti-dsDNA), etc.

For the period 2008-2013, the data were collected by patient anamnesis and medical files.

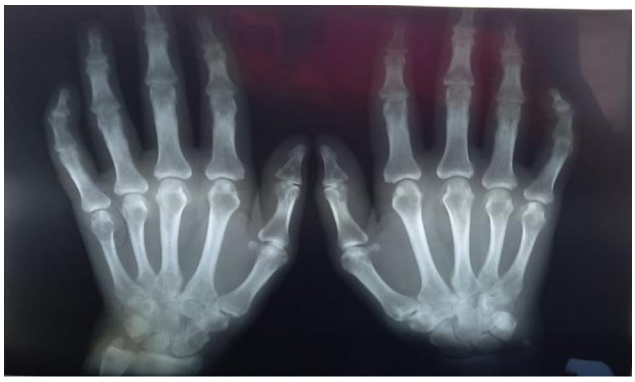
Clinical findings

This patient meanwhile has performed regular consultations with the Rheumatologist of the district. The management of the case included the physical therapy rehabilitation program when she was diagnosed and treatment with NSAIDs, analgesics, glucocorticoids, Methotrexate, folic acid, and Plaquenil (**Table I**).

The first hospitalization was in 2013 at the Rheumatology unit in "Mother Teresa University Hospital"(MTUH) in Tirana, a tertiary healthcare center. The main symptom she presented was joint pain. Further examination revealed the reduction of the arch of joint movement, edema, and fine crepitations.

The radiological assessment revealed osteoporosis of both hands in the form of bands, narrowing of the articular spaces, geode, and semi-ankylosis. Bilateral gonarthrosis was detected on radiographic examination of the genus joints. **Figure 1** presented the radiological view of the patient in 2013. The diagnosis was Arthritis Rheumatoid Stage III-IV.

Figure 1: Radiological view: Patients' hands in the year 2013.



She was treated for rheumatoid arthritis and started DMARDs therapy on a high dose of Leflunomide for three days, followed by a dose reduction for the next 27 days. Therapy with Plaquenil, Ranitidine, Prednisone, Naproxen, and Calciocarbonat + cholecalciferol, was applied concurrently. **Table I** shows the treatment scheme prescription of the patient in 2013.

Table I: Treatment scheme prescription in 2013.

Name of the drug	Dosage	Method of administration	Duration
Arava (Leflunomide)	20mg	5 tablets/ day	3 first days
Arava (Leflunomide)	20mg	½ tablet/ day	The next 27 days
Plaquenil	200mg	2x1 tablet/ day	30 days
Ranitidine	150mg	1 tablet/ day	30 days
Prednisone	5mg	2 tablets/ day	30 days
Naproxen	250mg	2x1 tablet / day	30 days
CADTRE (Calcio carbonato + colecalciferolo)	1000mg + 880 UI	1 bustine/ day	30 days

Looking at the chronicity of her problem, especially with just minimal improvement with the current treatment plan, the patient was subjected in 2021 for the third time at the Rheumatology unit at MTUH, with complaints of generalized joint pain of inflammatory character, fatigue, marked bodily weakness, marked difficulty in movement. Joints appeared infiltrated and painful in pressure. Both genu articulations presented hypertrophic synovium, and pain in flexio-extension. Deformities of hands were present too and the Squeeze test was positive bilaterally. The first formation was limited. Immunologic parameters were monitored RF was very high at 663.0 UI/ml, ERS 60 mm/h, and CRP 8.4 mg/dl. Based on this situation rheumatologist specialist decided to start the treatment with biological therapy Golimumab.

Table II shows the recommended treatment of the female patient during and after hospitalization in 2021.

Table III shows the results of the connective tissue screening profile that included erythrocyte sedimentation rate, C-reactive protein (CRP), anti-cyclic citrullinated peptide (anti-CCP), antineutrophil cytoplasmic antibody (ANCA) plus anti-double-stranded DNA antibody (anti-dsDNA) and rheumatoid factor (RF).

The patient was subject to DAS28 evaluation at the start of the new scheme of treatment with Golimumab, with a score of 5.5 (**Table IV**). After one year of treatment with Golimumab, was done a new evaluation of immunologic status (CRP, RF, ERS- **Table III**) and physical function of the patient using the DAS28 tool. Hematologic investigation results improved CRP from 8.4 mg/dl to 7.3 mg/dl, RH from 663.0 UI/ml to 255UI/ml, and the score of DAS28 were 4.8.

At the end of this case study, the patient underwent an interview on HAQ before and after treatment with Golimumab. The result obtained from the interview is shown in **table V**. An improvement in Pain rate and Health rate is noticed after 12 months of treatment.

Table II: The recommended treatment in 2021, including Golimumab.

Name of the drug	Dosage	Method of administration	Duration
Golimumab	50mg	2 pens SC/ month	
Prednisone	5mg	2 x1 tablet/ day	
CaVitD3	1000 UI	1 tablet/ day	
Omeprazole	20mg	1 tablet/ day	
Naproxen	500mg	2x ½ tablet/ day	In pain
Methotrexate	2.5mg	2x2 tablets / 1 day on week	
Folic acid	5mg	2 tablets/ day	After MTX

Table III: Laboratory parameters for 2013, 2019 to 2022.

Laboratory parameters	2013	2019	2020	2021	2022
CRP	103mg/dl	13.2mg/dl	233.9mg/dl	8.4 mg/dl	7.3 mg/dl
RF	200UI/ml		450 UI/ml	663.0 UI/ml	255UI/ml
T-score	-1.2				
Fibrinogens	491 mg/dl		630mg/dl	459 mg/dl	490 mg/dl
C3	109mg/dl				
C4	19mg/dl				
Anti-CCP	363 U/ml				
Anti-DNA	(-)				
ERS	39mm/h	70mm/h	105mm/h	60 mm/h	72mm/h
K+	7.9 mmol/l			4.1 mmol/L	
Uremia	27mg/dl	49 mg/dl	35mg/dl	41mg/dl	36mg/dl
Creatinine	0.7mg/dl	0.65 mg/dl	0.92 mg/dl	0.64mg/dl	0.53mg/dl
25-(OH) vitamin D			15.1 ng/ml		

Table IV: DAS28 in two times.

	Before treatment with Golimumab	After treatment with Golimumab
DAS28	5.5	4.8

Table V: HAQ used before and after treatment with Golimum.

	Before treatment with Golimumab	After treatment with Golimumab
HAQ	2.88	2.33
Supporting devices	Supporting stick Auxiliary equipment for the toilet Can opener	Support stick Equipment for opening cans
Categories that need help with	Dressing and grooming Arising Hygiene Gripping and opening things Errands and chores	Dressing and grooming Arising Hygiene Errands and chores
Pain rate (0-100) 0- without pain / 100- severe pain	92	87
Health rate (0-100) 0-very good / 100- very bad	95	89

Discussion

Rheumatoid arthritis is usually diagnosed based on the 2010 American College of Rheumatology-European League Against Rheumatism (ACR-EULAR) Classification[8]. The current treatment paradigm for patients with rheumatoid arthritis (RA) consists of disease-modifying antirheumatic drugs (DMARDs), including conventional synthetic DMARDs (csDMARDs) and biologic DMARDs (bDMARDs)[9]. The American College of Rheumatology (ACR) and the European League Against Rheumatism (EULAR) propose methotrexate as the first step in the treatment of patients with active RA. Although ~30% of patients achieve full clinical remission with methotrexate monotherapy, 70% require a step-up treatment that includes the addition of either csDMARDs or bDMARDs[10]. A study conducted by Keystone[11] in 2013 found an improvement in patients treated with Golimumab and MTX from 35% to 55%.

Estimates of efficacy rates of TNF-α inhibitors may depend on several factors, including patient characteristics, such as disease duration, prognostic factors, number of previously failed DMARDs, and disease activity, as well as the dose of TNF-α inhibitor and the designs of the studies from which they were obtained. Despite some variation attributable to these factors, estimates derived from randomized, controlled trials (RCTs) suggest that between 40% and 50%[12] of RA patients treated for at least 6 months with one of the three first-generation TNF-α inhibitors (etanercept, adalimumab, and infliximab) failed to achieve the American College of Rheumatology 50% (ACR50) improvement criteria[13], while the results from a large, registry-based study[14] indicated that over 70% of these patients fail to achieve Disease Activity Score 28 joint count (DAS28)-defined "remission" (DAS28 <2.6).

Contrasvely with the previous study, in the case we have presented the female patient presented an improvement of CRP from 8.4 mg/dl to 7.3 mg/dl, RH from 663.0 UI/ml to 255UI/ml, and the score of DAS28 were 4.8 after 12 months of treatment with biological therapy Golimumab. Additionally, based on the HAQ interview and before and after treatment with Golimumab, the patient has seen an improvement in Pain rate and Health rate. Those findings are the same as two other studies conducted by Shono, and Shimizu et al (15,16). So Shono in a study performed on Japanese patients[15], the primary endpoint, clinical remission, was attained in 83% of patients according to DAS28-CRP criteria ($p < 0.001$) and 69% according to SDAI criteria ($p < 0.001$) by week 24. Adverse events were reported in 11.6% of patients receiving golimumab. In a recent study (2020) by Shimizu et al.,[16] patients demonstrated significant improvement in the clinical signs and symptoms of rheumatoid arthritis at 24 weeks, as indicated by the reduction of DAS28-CRP (Δ0.87), DAS28-ESR (Δ0.85), SDAI (Δ7.32), and CDAI (Δ6.98) scores.

Conclusion

The use of Golimumab with MTX reduces clinical signs and symptoms in patients with RA, thereby improving both qualities of life and pain relief.

Conflict of Interest and Informed Consent

No conflict of interest was identified during data collection and analysis. The patient was acquainted in advance with the terms of the study and obtained written consent.

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