

Low-dose methotrexate in the treatment of knee osteoarthritis: Case report

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Abstract

Osteoarthritis (OA) is a degenerative disease, that affects all joints, but the knee joint is most often affected. Pain is the most disturbing sign for patients that forces them to seek medical care. There are in place many treatment strategies for knee osteoarthritis. The knee osteoarthritis treatment plan should be personalized for each patient. We present a patient, who has been diagnosed with knee OA. We use low-dose methotrexate in the treatment of knee osteoarthritis. After six months, the patient has an improvement in pain with 4 points (from 10 to 6). This case demonstrated that the use of methotrexate in knee osteoarthritis provided a clinically relevant reduction in knee pain and improvement in physical function.

Keywords

Osteoarthritis; Pain; Treatment; Methotrexate.

Introduction

Osteoarthritis (OA) is a degenerative disease of the joint which is characterizes by fibrillation and erosion in cartilage, chondrocyte proliferation and osteophyte formation at the joint margins, and sclerosis of subchondral bone [1].

Osteoarthritis affects all joints, but the knee joint is most often affected. Using data from the National Health Interview Survey, in the US, it is estimated that approximately 14 million people have symptomatic knee osteoarthritis [2]. Notably, more than half of those suffering from osteoarthritis are over 65 years of age.

According to the 2010 WHO Global Burden of Disease Study, the global prevalence of radiographically confirmed symptomatic knee OA in 2010 was estimated at 3.8% (CI95%: 3.6-4.1%) [3].

Pain is the most disturbing sign for patients that forces them to seek medical care. There are in place

many treatment strategies for knee osteoarthritis.

The EULAR recommendations emphasize that the knee osteoarthritis treatment plan should be personalized for each patient, taking into account the patient's constitutional profile, their behaviors and knowledge, the co-morbidity and the treatment they receive, the influence and the presence of the risk factors, the degree of joint damage, what treatments are available and obviously, the costs of the treatment [4].

Case Report Presentation

A 68-year-old patient, has been diagnosed with knee OA more than 15 years ago. The patient has been hypertensive for 17 years, and is treated with atenolol 50 mg per day, amlodipine 5 mg per day. The non-steroidal anti-inflammatory drugs, physiotherapy and hyaluronic acid intra-articular injection were used to alleviate knee pain. Initially she had periods of improvement, but the pain is evident, which seems to limit the patient's movements. The patient performs clinical examinations, blood tests (blood cell counts, liver function, renal function, hepatitis B/C tests), and a knee MRI.

In these conditions, we set the treatment with methotrexate (six months treatment) starting with 7.5 mg per week for the first week. For the second week the dose was increased by 2.5 mg per week. We increase by 5 mg per week for the second 2 weeks and we used 15 mg per week for the remaining period. A few days after taking methotrexate, the patient took folic acid tablets to reduce the methotrexate side effects. MTX is a folic acid antagonist which has both an anti-proliferative and an anti-inflammatory action [5]. We monitored the patient through biochemical analyses, and it turned out that the patient tolerated methotrexate quite well (ALT and AST normal). We also monitored the pain every two weeks for a period of 6 months and saw that the improvement in pain started to be felt 6 weeks after the start of the treatment. In the sixth month (week 24), the patient moved freely, she could easily flex the knee joint and, the knee pain is relieved pain assessed by visual analogue scale (Table 1).

ID Card :		Lab. Referent :				
Test name	Result	Unit	Reference	Result words	Samp./Meth.	App. Time
Emri i testit	Rezultati	Njesia	Vlerat normale	Vleresimi	Mat./Met.	Ora e Aplk.
Analiza						
SGOT-AST	12.72	U/l	0 - 40		Serum / Fotometri	02/06/21 12:37
SGPT-ALT	14.33	U/l	0 - 41		Serum / Fotometri	02/06/21 12:37
Bilirubina Direkte	0.16	mg/dL	0.0 - 0.3		Serum / Fotometri	02/06/21 12:37
Bilirubina Totale	0.34	mg/dL	0.3 - 1.2		Serum / Fotometri	02/06/21 12:37
Kolesterol Total	165.22	mg/dL	< 200		Serum / Fotometri	02/06/21 12:37
HDL Kolesterol	60.66	mg/dL	45 - 65		Serum / Fotometri	02/06/21 12:37
LDL Kolesterol	88.86	mg/dL	0-140		Serum / end point	02/06/21 12:37
Trigliceridi	78.66	mg/dL	0-150		Serum / Fotometri	02/06/21 12:37
D-Dimer	267.41	ug/mL	<500		Plazem / Fotometri	02/06/21 12:37

Figure 1: Blood test.



Figure 2: Patient 68 years old, female.

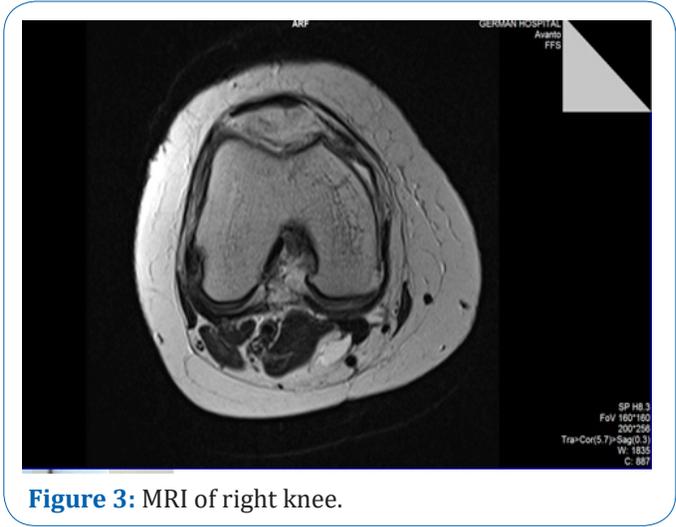


Figure 3: MRI of right knee.

After six months, the patient has an improvement in pain with 4 points (from 10 to 6).

Table 1: Results of pain in time using Visual Analogue Scale (VAS).

time		Pain assessment (VAS)											
		0	1	2	3	4	5	6	7	8	9	10	
month 1	week 2												10
	week 4												10
month 2	week 6										9		
	week 8											9	
month 3	week 10										8		
	week 12									8			
month 4	week 14									7			
	week 16										7		
month 5	week 18									6			
	week 20										6		
month 6	week 22											6	
	Week 24												6

+ pain assessment by the patient

Discussion

Synovitis is highly prevalent in OA and is associated with pain [6].

Methotrexate as the disease-modifying antirheumatic drug, is used for the treatment of AO of the knee by reducing local inflammatory cytokines, as well as inhibiting the infiltration of immune cells into OA joints. As a result, joint inflammation is controlled and joint pain is alleviated.

There is evidence that low-dose MTX may have beneficial effects in OA [7,8]. Methotrexate in the treatment of synovitis is a very good alternative because it is efficient, easy to administer and has a low cost.

Conclusion

This case demonstrated that the use of methotrexate in knee osteoarthritis provided a clinically relevant reduction in knee pain and improvement in physical function.

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