Original Research Article

Intra articular corticosteroid injection in rheumatoid arthritis patients

ABSTRACT

Objectives: This study was done to assess the effect of intra-articular injection of corticosteroid in persistent synovitis in rheumatoid arthritis (RA) patients.

Methods: Thirty RA patients with persistent synovitis in one joint were subjected to intra-articular injection of corticosteroid under ultrasound guidance. All patients were examined for disease activity by disease activity score 28 (DAS28), functional assessment using the Modified Health Assessment Questionnaire (MHAQ), and laboratory investigations (erythrocyte sedimentation rate and C-reactive protein). Affected joints were evaluated for pain by visual analog scale (VAS) and tenderness score. Follow-up of the patients was done at two and six months after injection by clinical, laboratory.

Results: There was a significant improvement in VAS, tenderness score,

Conclusion: Intra-articular injection of corticosteroid is a safe and effective treatment option in persistent synovitis in rheumatoid arthritis patients.

Keywords: glucocorticoids; arthritis, rheumatoid; injections, intra-articular; synovitis.

1. Introduction

"Rheumatoid arthritis (RA) is a chronic systemic inflammatory disorder which is characterized by synovial inflammation and joint destruction, as well as extraarticular manifestations". [(1)] "Cytokines have a central role in the pathogenesis of this synovial inflammation. Tumor necrosis factor a (TNFa) is one of the dominant cytokines. Many studies have shown that TNFa is present

in biologically significant amounts in RA synovial tissue and fluids, and the amount seems to parallel the extent of inflammation and bone erosion". [2,3] "RA is the rheumatic condition that most severely affects the joints. *Pannus*, the hyper-trophic and hyperplasic synovial membrane formed, is an aggressive tissue that damages articular and periarticular structures, whether through the release of metalo-proteinases or its mechanical invasion of the surrounding joint space". [4-6] "Even though RA treatment has evolved in recent decades with the advent of immunobiological therapy allied with disease-modifying antirheumatic drugs (DMARDs), [7] patients with mono or oligoarticular synovitis may persist". "In these cases, intra articular corticosteroid injection can be a useful therapeutic tool. It is known that triamcinolone acetonide (TH) is the drug of choice for intra-articular treatment of RA, given its synovial atrophying properties and slow absorption from the injection site". [8-14] "On the other hand, if injected outside of the joint, it can cause serious adverse local effects". [15]

"Glucocorticoid therapy may be recommended due to its economic effectiveness; however, the option of glucocorticoid administration via intra-articular injection (IAI) is not recommended in the latest EULAR guidelines" [16]. "In the setting of real clinical practice, IAI of a glucocorticoid is often used, with clinical experience indicating that IAI provides comparable, or sometimes better, effectiveness than oral glucocorticoids. A considerable number of articles suggest that the addition of glucocorticoid via IAIs to RA treatment results in better clinical outcomes" [13,17-21].

2. Meterials and Method

2.1. Enrollment of the patients

This study was done on 30 RA patients collected from outpatient clinic of Tanta University Hospital diagnosed according to the latest diagnostic criteria of RA [22]. The patients included in this study complained of persistent activity in one joint despite their adherence to treatment. Written informed consent from all the patients was collected and all our patients were subjected to IAI of 40 mg triamcinolone acetonide. Excluded from this study any patients with bleeding tendencies, systemic flare, received IAI of glucocorticoid in the same joint in the last 3 months.

2.2 Clinical assessment

All the patients were subjected to thorough history taking, joint examination, assessment of disease activity using score of disease activity (DAS28), functional assessment by Modified

Health Assessment Questionnaire (MHAQ), The degree of tenderness of the injected joint was assessed on a score (0–3). The degree of pain was evaluated by using the visual analog scale (VAS) for pain in the affected joints measured using a ten cm horizontal scale with 10 degrees.

2.3 Laboratory tests

All the patients were assessed by complete blood count (CBC), erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP).

2.4 Intra articular injection

All the patients received one intra articular injection of 40 mg triamcinolone acetonide in the affected joint. Before injection the skin was washed by betadine, after injection the site of injection was covered with strip and patient was advised to complete bed rest for 24-48 after injection. Follow up of the patients was done at 2 months after injection by assessment clinically and by laboratory tests.

2.5 Statistical analysis of the data

Data were collected and analyzed using IBM SPSS software package version 20.0. (Armonk, NY: IBM Corp). Qualitative data were described using the number and percent. Quantitative data were described using the mean and standard error of the mean. The probability value (*p*-value) ≤ 0.05 was considered statistically significant.

3. Results and Discussion

Clinical characteristics of the patients were demonstrated in table (1). There was female predominance in our patients. Distribution of injected joints was demonstrated in table (2) and the wrist joint was the most injected one. Clinical assessment of injected joint was done in the form of VAS and tenderness score was illustrated in table (3).

There was significant improvement in DAS28 after 2 months of injection and in VAS and tenderness score as shown in table (4), there was also significant improvement in values of ESR and CRP. table (4)

Conclusion

It is concluded that intra-articular injection of corticosteroid is a safe and effective treatment option in persistent synovitis in rheumatoid arthritis patients.

Consent

As per international standard or university standard, patient(s) written consent has been collected and preserved by the author(s).

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Parameter	Patients (n=30)	
Age (years) Range Mean± SD	 30-63 42.33± 10.08	
Sex	No.	%
Female	29	96.67
Male	1	3.33
Duration of illness (years) Range Mean ± SD Median Interquartile range	 3-25 10.33±7.217 8 4	
MHAQ Range Mean ± SD	 0.25-1.25 0.63±0.28	
DAS28 Range Mean ± SD	 2.73-4.6 3.6±0.62	
CRP (mg/l) Range Mean ± SD	 4-24 9.53± 4.29	
ESR 1st h(mm/h) Range Mean ± SD	 10-38 21.27±8.85	

Table (1) clinical and laboratory parameters of the patients before start of injection.

MHAQ: Modified Health Assessment Questionnaire, DAS28: Disease Activity Score 28, CRP: C Reactive Protein, ESR: Erythrocyte Sedimentation Rate.

Joint	Patients (n=30)	
	No	%
Wrist	18	60
Ankle	5	16.67
Elbow	7	23.33

Table (2): Distribution of injected joints.

Parameter	Patients (n=30)
VAS	
Range Mean ± SD	4 - 8 6.57±1.1
Tenderness score	
Range Mean ± SD	2 - 3 2.57±0.504

Table (3): Clinical characteristics of affected joints before injection.

VAS: Visual Analogue Scale.

	Before treatment	**2 months**
Patients (n=30)		
VAS		
Range	4 – 8	2 - 5
Mean± SD	6.57±1.1	3.1 ±0.885
P		<0.001*
Tenderness score		
Range	2 – 3	1-2
Mean± SD	2.77± 0.43	1.57±0.5
P		<0.001*
MHAQ		
Range	0.25-1.25	0.25-1
Mean± SD	0.63±0.28	0.550±0.234
P		0.007
DAS28		
Range	2.73-4.6	2.3-4.1
Mean± SD	3.6±0.62	3.065±0.495

P		<0.001*
ESR 1st h(mm/h)		
Range	10 – 38	8-30
Mean± SD	21.27±8.85	17.67±5.886
P		0.024*
CRP (mg/dl)		
Range	4 -24	3 – 12
Mean± SD	9.53± 4.29	6.97±2.512
P		0.004*

Table (4): Comparison between clinical, laboratory and clinical characteristics of affected joint before and 2 months after injection.

VAS: Visual Analogue Scale, MHAQ: Modified Health Assessment Questionnaire, DAS28: Disease Activity Score 28, CRP: C Reactive Protein, ESR: Erythrocyte Sedimentation Rate.