

Case Report

Rheumatoid Arthritis

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Abstract

Rheumatoid arthritis (RA) is a chronic, systemic, inflammatory disorder that primarily affects small peripheral joints. The average annual incidence of RA in the United States is 0.5 per 1000 persons per year. Female : male ratio of 3:1. Onset of the disease can occur at age ranging 20–60 years old. The precise cause of RA is unknown. Major theories mention it's caused by environmental factors, genetic predisposition or immunogenic.

Diagnosis of RA include morning stiffness at least one hour before maximal improvement, arthritis of three or more joints, arthritis of the hand joints, symmetric arthritis, rheumatoid nodules, positive serum rheumatoid factor and radiographic changes (hand and wrist). Rheumatoid arthritis is defined by the presence of four or more criteria and criteria 1 through 4 must be present for at least six weeks.

A 44 year-old woman with pain and stiffness in her hand on and off since 10 years ago. She had difficulty doing her daily living activities (ADL) such as taking a bath and vocational activities such as cooking and washing clothes. On examination there were range of motion (ROM) limitation of the elbow, wrist and fingers, *boutonnière* deformity on left middle finger and right little finger. On X-ray examination we found erosion on finger joints.

The rehabilitation program given were ROM exercises, gentle stretching exercises, finger splint and ADL modifications. We advised her to take the rheumatoid medication regularly (meloxicam, methylprednisolon and chloroquin), do exercises, wear the splint, and do the joint protection program. The goals of treatment were pain relief, maintenance of joint range of motion and mobility, further deformity prevent with joint motion modification therefore improving the quality of life.

Keywords: *rheumatoid arthritis, boutonnière deformity, ADL modification, rehabilitation program.*

Introduction

Rheumatoid arthritis (RA) is a chronic, systemic, inflammatory disorder that primarily affects small peripheral joints.¹ The average annual incidence of RA in the United States is 0.5 per 1000 persons per year.² Female : male ratio of 3:1.³ Onset of the disease can occur at age ranging 20 – 60 years old.⁴ Prevalence rises with age with peak incidence between 4th and 5th decade of life.^{2,4} The precise cause of RA is unknown. Major theories mention its caused by environmental factors, genetic predisposition or immunogenic.⁴

RA presents as a symmetrical peripheral polyarthritis involving the small joints of the hands and feet.^{1,3} Common presenting symptoms are joint pain, stiffness, and swelling which are typically worse in the mornings and improved as the day progress. The disease eventually leads to varying degrees of functional loss.³ Diagnosis of RA according to American Rheumatism Association classification include morning stiffness at least one hour before maximal improvement, arthritis of three or more joints, arthritis of the hand joints, symmetric arthritis, rheumatoid nodules, serum rheumatoid factor (RF [+]), and radiographic

changes (hand and wrist). RA is defined by the presence of four or more criteria, and criteria 1 through 4 must be present for at least six weeks.⁴

Joint damage from active synovial inflammation, ultimately leading to poor outcomes, occurs early in the course of the disease. Joint protection program helps to preserve the joints function, maintain the alignment, and keep deformities from worsen (Joint Protection Program). Early aggressive treatment to suppress inflammation and to prevent joint damage should be initiated. Disease-modifying anti-rheumatic drugs (DMARDs) should be offered as soon as possible after disease onset. Treatment of late-stage disease, where the joint is already damaged, is focused on pain relief and function maintenance. Physical and occupational therapy goals are pain relief and preservation of joint range of motion, mobility, and function.¹

Case Report

A 44 years old female, referred from orthopedic outpatient clinic with RA, multiple joint stiffness, and left middle finger *boutonnière*. The chief complaint was pain and stiffness at both hands. Pain and stiffness felt since 6 months ago. Pain increased especially after waking up in the morning along with stiffness that persisted about an hour. Sometimes pain also felt on right shoulder, elbow and both wrist. She had been suffering from these repetitive complaints since 10 years ago. The pain was on and off,

influenced by her feelings. If she was stressed from issues (problem with her family or neighbor), the pain occurred followed by swelling on elbow, wrist and finger joints. She also couldn't straighten her left middle finger since 10 years ago. She also complained difficulty in ADL such as holding water scoop when bathing and couldn't do household activity such as washing dishes and cooking because of the pain and stiffness in her hands. She already went to rheumatology outpatient clinic and got medication (meloxicam 7.5 mg twice daily, methylprednisolon 4 mg twice daily, and cloroquine once daily).

From physical examination we found her body weight was 48 kilograms and body height 158 centimeters with normal gait. Range of motion (ROM) limitation were found in elbow extension, wrist flexion-extension, and index to little fingers flexion-extension. No ROM limitation at both thumbs, elbow flexors, shoulder and lower extremities. There were also valgus deformity 20° on both elbows, and *boutonnière* deformity on left middle finger and right little finger. Elbow valgus stress test was positive. Pain at left proximal interphalangeal (PIP) joint of middle finger and right PIP joint of little finger Wong Baker Face Scale 5 (WBFS 5), pain at right elbow WBFS 2. No sensory deficit. No palpable warm. From X-ray we found erosion of finger joints. From laboratory results we found high ESR (80) and high RA test (64 IU/mL).



Figure 1. Valgus deformity of elbow



Figure 2. Boutonnière deformity

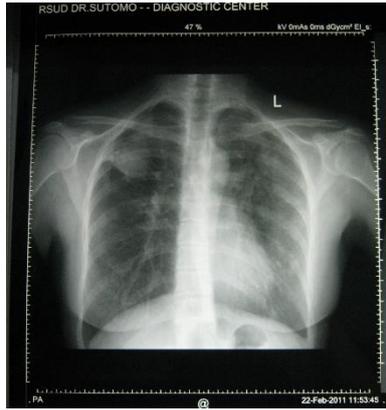


Figure 3. Chest X-ray examination showed no abnormality on heart and lungs



Figure 4. Hand X-ray examination showed erosion of finger joints



Figure 5. ADL modification with joint conservation technique



Figure 6. Finger splint

Anamnesis, physical examination and supporting examination all support the diagnosis of RA. The problem list according to ICF classification for this patient were problem of the body function : sensation of pain (b280), mobility of joint function (b710); body structure : structure of upper extremity (s740); activity : carrying out daily routine (d240), lifting and carrying object (d430), fine hand use (d440), hand and arm use (d445), carrying, moving and handling objects, other specified and unspecified (d449), washing oneself (d510), eating (d550), doing housework (d640).

Rehabilitation program given to the patient were ultrasound diathermy (USD) at right and left wrist, and left middle finger with 3 MHz frequency, 1 W/cm² intensity, continuous mode, 5 minute in each region; active ROM exercise of the upper and lower extremity; gentle stretching of the left and right wrist, and left middle finger; ADL modification; and left and right index to little finger splinting. We monitor the complaints, WBFS, and ROM. We educated about the importance of taking the drugs regularly, doing exercises, wearing splint, doing ADL modification, and how to do the proper joints protection.

Discussion

RA is a chronic inflammatory disease characterized by joint swelling, joint tenderness, and destruction of synovial joints. RA has a significant negative impact on the ability to perform daily activities, including work and household tasks, and health-related quality of life, and it increases mortality risk. The process produces an inflammatory response of the synovium (synovitis) secondary to hyperplasia of synovial cells, excess synovial fluid, and the development of pannus in the synovium. The pathology of the disease process often leads to the destruction of articular cartilage and ankylosing of the joint.⁵⁻⁷

RA is a chronic progressive disease that, if left untreated or inadequately treated, can cause extensive joint damage and chronic pain. Our patient already had her signs and symptoms since 10 years ago. But because of

low economic and education status, she didn't seek proper help until the time she came to Dr. Soetomo general hospital. A number of prognostic variables that predict a poor outcome have been identified on her including female sex, a high number of swollen/tender joints, high titer of rheumatoid factor (RF), low socioeconomic status, low educational status, psychosocial problems, and the presence of erosions on joint radiographs.^{2,7}

Our patient wish was at least painless daily living activities. The main factors that have to be taken into account for the rehabilitation of people with rheumatic diseases are the restriction of the mobility and the restriction of activity. The rehabilitation program uses all methods and technological means for the correction of the damages, emphasizing in the preservation and restoration of the function.⁸

Nalebuff described classification that characterizes the *boutonnière* deformity. This system has 3 stages, based on the passive correctability of the PIP joint flexion deformity and the condition of the articular surfaces of the PIP joint. Stage 1 boutonniere deformity is characterized by synovitis of the PIP joint and a slight fully correctable extensor lag. Stage 2 deformity consists of a marked flexion deformity of the PIP joint that is either flexible or fixed. Stage 3 deformity is characterized by destruction of the PIP joint. The patient already at stage 2 with fixed flexion deformity at left middle finger PIP joint and flexible flexion deformity at right little finger PIP joint. It might be caused by laxity of the dorsal capsule from proliferative synovitis around the metacarpophalangeal (MCP) joint, and elongation or erosion of the attachment of the extensor pollicis brevis tendon to the base of the proximal phalanx (leading to flexion deformity). As the patient refuse to do any surgery, finger splints is another treatment option. The splints can improve the stability, decrease the pain, and the inflammation.⁹

We educated the patient to modify her tools at home into a bigger handle ones to avoid tight pinching and gripping. We also gave her joints protection program consisting information of how to avoid positions that are

bad for her joints, proper body mechanics, and how to reduce work effort. A review by Esther et al, has shown positive effect of comprehensive occupational therapy and instruction on joint protection on the important outcome functional ability. In reduction of loads strategy, the use of rubber or foamy material handholds to increase size of pencils and pen and light handholds of objects of writing is included.¹⁰

Rheumatoid arthritis is a condition which affects the quality of life of the patient and especially the health related quality of life. It brings with it pain, functional disability, decline in work performance, all of which decrease the quality of life.¹¹ After 3 months of rehabilitation program, the pain and stiffness were significantly decreased (VAS = 1-2) and she could do her ADL and vocational activities with modification. Thus improving her quality of life.

Conclusion

Rheumatoid arthritis (RA) is a chronic, systemic, inflammatory disorder that primarily affects small peripheral joints that can cause extensive joint damage and disability. Establishing the diagnosis of RA early in the course of disease is important so that effective treatment can be initiated in a timely manner. The goals of treatment were pain relief and maintenance of joint range of motion and mobility, prevention of further deformity with joint motion modification therefore improving the quality of life.

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