

Case Report : Temporomandibular Joint Involvement in Rheumatoid Arthritis

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Rheumatoid arthritis(RA) is an of autoimmune inflammatory systemic disease. It is characterized by uncontrolled proliferation of synovial tissue and a wide array multisystem comorbidities. The disease may involve any joint of the body, but often starts in the peripheral joints.

It was reported that more than 50% of RA patients exhibit clinical involvement of TMJ. This report is a case report of dental management and progression for 16 months in patients who had severe bony change in TMJ involved rheumatoid arthritis

Dental management was included palliative treatment such as interocclusal splints, physical therapy, mouth opening exercise.

Although it was progressed rapidly osteolytic bone change during follow-up, no more advanced occlusal change and improved symptom and jaw motion.

Further investigations about rule of dentistry in TMJ involvement in RA maybe needed.

Key words: TMJ, Rheumatoid Arthritis, Osteolytic change

I. INTRODUCTION

Rheumatoid arthritis(RA) is an autoimmune inflammatory systemic disease in which the inflamed and hypertrophic synovial membrane grow onto the articulating surfaces. The disease may involve any joint of the body, but often starts in the peripheral joints.

Prevalence of RA has varied from 0.1% to 1.8% depend on geographic distributions, and more high prevalence in women than in men.^{1,2)} The disease

can occur at any age, but it is most common among those aged 40-70 years, its incidence increasing with age. In Korea, Prevalence of this disease was reported as 1.4%.³⁾ The wrist are nearly always involved, as are the proximal interphalangeal joints and metacarpophalangeal joints. The distal interphalangeal joints and sacroiliac joints tend not to be affected. Although the earliest symptoms of rheumatoid arthritis occasionally may occur in the TMJ, generally other joints are involved first. Also, TMJ complaints may be overshadowed by RA symptoms elsewhere in the body.

However, in this case, there are more severe osteolytic change on radiological findings of TMJ than in other joints.

This report is a case report of dental management and progression in patients who had severe bony change in TMJ involved rheumatoid arthritis

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II. CASE REPORT

1. Chief complain & History

34 years old man was referred from department of rheumatology in medical center of Wonkwang university, Ik-san, Korea. Before 4 months, He had been diagnosed as rheumatoid arthritis in there. He mainly complained pain of Rt elbow & posterior neck pain and it's duration was 6months.

His dental chief complain was pain of both TMJ. When opening and chewing he complained pain of both TMJ, especially Rt TMJ was more prominent. He had been history of locking closed before a few years. There are no familiar history.

2. Clinical Examination

He was observed mild limitaion of jaw movement with pain of TMJ. Maximum mouth opening length was 42 mm and comfortable mouth opening length was 36 mm. He also complained TMJ pain during protrusion and lateral excursion of mandible. In Head and Neck muscle palpation, he was seen tenderness of ant of Rt. masseter.

It was discluded in canine to the other side canine. There was much difference of 4 mm in RCP(retruded contact position)-ICP(inter cuspal position).

3. Radiographic findings

Severly flattening and irregularity finding was seen both TMJ on panoramic view and transcranial view.

4. Laboratory test

Laboratory finding was increased erythrocyte sedimentation rate(17 mm/hr), the presence of C-reactive protein(10.12 mg/L), positive rheumatoid factor(10.12 mg/L).

5. Progress of treatment

He had been medication in department of rheumatology. Therefore addictive medication didn't need. To improve symptom association with TMJ of patient and decrease load in TMJ, interocclusal stabilization splint was set, and did supplemental physical and self-exercise therapy. He recorded visual analog scale(VAS) for his symptom every visit. At first visit of VAS was 5,4 in each Rt and Lt TMJ pain. He was improved gradually. After 3months, mouth opening length was regain in normal(45 mm). After 5months, he complained mild discomfort as 1 in VAS. However, on 8 months after first visit of radiographic finding, it was seen more advanced aggressive osteolytic change. In 14 months after first visit, radiographic was additionally taken, slightly progression of bony change than second radiograph. But, it was seen to more degree stably. Although there was severe bony change in TMJ rapidly, no advanced occlusal change more than.

III. DISCUSSION

Rheumatoid arthritis is characterized by persistent joint synovial tissue inflammation. The predominant symptom of RA are pain, stiffness, and swelling of peripheral joints.^{4,5)} Over time, bone erosion, destruction of cartilage, and complete loss of joint integrity can occur. Eventually, multiple organ systems may be affected.⁸⁾

Joints destruction from synovitis can occur rapidly and early in the course of the disorder: radiographic evidence is present in the more than 70% of patients with in first 2 years.⁴⁾

The TMJ may be involved in patients with RA and occasionally is the initial symptomatic joint in the body. The reported frequency of clinical TMJ involvement has varied from 4.7%⁶⁾ to 84%.⁷⁾ This variation may be due to different type of examination, difference in the study population or diagnostic criteria. When the TMJ is involved, there is usually pain, tenderness and swelling, crepitation,

stiffness on opening the mouth, and limitation of jaw motion, or it may be asymptomatic.^{9,10)} The change seen radiologically, especially cortical erosion or flattening, reduced joint space and subcondylar cystic destruction. The incidence of TMJ lesions found increased with the duration of RA, and there is a positive correlation between the severity of RA and the severity of involvement in TMJ.¹¹⁾

It has known that radiologic evaluation is difficult because of the location of the joint and its relation to other cranial structures.¹²⁾ But, CT(computerized tomography) or MRI(magnetic resonance imaging) was reported as being extremely effective in diagnosis of the early changes in patients with RA.^{13,14)} In this case, it is CT or MRI expensive, so we had to make to do radiograph. But, it was enough to find bone change due to so severe bone change in TMJ.

It was observed ant. open bite when we had examd this patient first. Ant open bite has been reported as a clinical sign in RA.¹⁵⁾ This clinical sign developed as a result of progressive loss of

mandibular rami height secondary to destruction of the condylar surface and hence the inability to bring incisors into occlusion.

Many studies^{9,16)} are reported Masticatory muscle tenderness or myalgia in TMJ involvement in RA, but in this case there is only Rt MM tenderness. It may be due to medication before TMJ examination. Rheumatoid arthritis primarily is a clinical diagnosis. No laboratory tests exist that are pathognomonic or diagnostic of RA. Laboratory findings most commonly seen in RA include an increased erythrocyte sedimentation rate, the presence of C-reactive protein, positive rheumatoid factor in 85% of affected patients, and hypochromic microcytic anemia.¹⁷⁾

Table 1 is showed the 1987 revised criteria for the classification of rheumatoid arthritis.¹⁸⁾

Pharmacotherapy for RA involves NSAIDs for control of pain, with selective use of low-dose oral or intra-articular glucocorticoids, and DMARDs. DMARD(Disease modifying anti rheumatic drugs) included methotrexate, gold salts, hydroxychloroquine, sulfasalazine, ciclosporin, and azathioprine.

Table 1. The 1987 revised criteria for the classification of rheumatoid arthritis

Criterion	Definition
1. Morning stiffness	Morning stiffness in and around the joints, last at least 1 hour before maximal improvement
2. Arthritis of 3 or more joint area	At least 3 joint area simulatneously have had soft tissue swelling or fluid(not bony overgrowth) observed by a physician. The 14 possible area are right or left PIP, MCP, wrist, elbow, knee, ankle, and MTP joints
3. Arthritis of hand joints	At lesat 1 area swollen in a wrist, MCP, or PIP joint
4. Symmetric arthritits	Simulataneous involvement of the same joint area on both sides of the body(bilateral involvement of PIPs, MCPs or MTP is acceptable without absolute symmetry)
5. Rheumatoid nodules	Subcutaneous nodules, over bony prominece, or extensor surface, or in juxtarticular regions, observed by a physician
6. Serum rheumatoid factor	Demonstration of abnormal amounts of serum rheumatoid factor by any method for which the result has been positive in < 5% of normal control subjects
7. Radiographic changes	Radiographic chages typical of rheumatoid arthritis on posteroanterior hand wrist radiographs, which must include erosions or unequivocal bony decalcification localized in or most marked adjacent to involved joints (osetoarthritis changes alone do not qualify)

At least 4 of these 7 criteria. Criteria 1 through 4 must have been present for at least 6 weeks.



Fig. 1. Panoramic view of first examination Severly flattening and irregularity of both condyle of mandible.



Fig. 2. Panoramic view of 8 months after first examination The more advanced aggressive bony change than first examination.

Because joint destruction in rheumatoid arthritis begins within a few weeks of symptom onset; early treatment decreases the rate of disease progression, in today's "a reversed pyramidal" approach is favored, in which DMARDs are initiated quickly to slow disease progression as early as possible.^{5,19,20,21} In recent studies reported the biological agents etanercept and infliximab, both TNF- α inhibitors, were shown to be very effective for treating early rheumatoid arthritis when compared with methotrexate.^{22,23}

Although it progressed rapidly osteolytic bone change during follow-up, no more advanced occlusal change and improvement of symptom and jaw motion. In TMJ involvement in RA, palliative treatment such as interocclusal splints, physical therapy, and medication may prove to be helpful,⁸ and mouth opening exercise were helpful in maintaining jaw function.²⁴

Unfortunately, we still don't know why is more prominent in TMJ than other joints and rapidly progress bone destruction during management in spite of clinical improvement. Further investigation maybe needed.

It is well known as clinical and radiographic finding of the TMJ in rheumatoid arthritis. But, it is still lack of study about rule of dentistry in TMJ involvement in RA. The more studies about this may be need. It is helpful to improve quality of life of these patient.



Fig. 3. Panoramic view of 14 months after first examination. Slightly progression of bony change than second radiograph. But, it was seen to more degree stably.

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국문요약

증례보고: 류마티스 관절염 환자에서 측두하악관절의 이환

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류마티스 관절염은 다발성 관절염을 특징으로 하는 원인 불명의 진행성 염증성 질환이다. 초기에는 관절활막이 침습되지만 점차 주위의 연골과 골이 침습되어 관절의 파괴와 변형을 초래한다. 류마티스 관절염은 손목관절, 중수지관절과 근위지절간관절이 침범하기 쉽고 그 밖의 여러 관절에서도 나타날 수 있으며 측두하악관절에서도 빈번하게 나타나는 것으로 보고되고 있다. 이 증례에서는 다른 관절에서 보다 측두하악관절에서 두드러지고 급속하게 진행되었다. 의과적 약물 치료와 더불어 16개월동안의 교합안정장치 및 물리 치료, 운동요법을 통한 치과적 처치와 측두하악관절의 경과를 보고한다. 치료중 급속한 관절의 파괴는 있었으나 더 이상의 교합변화는 없었고 하악운동과 통증은 상당히 개선되었다. 다른 관절에 비해 측두하악관절에 두드러지게 나타나게 되는 요인과 이를 가속화시키는 요인에 대해서는 앞으로의 연구가 더 필요할 것이다.

주제어: 측두하악관절, 류마티스 관절염, 골흡수
