Bilateral TMJ involvement in Rheumatoid arthritis, a case report
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Abstract
Rheumatoid arthritis (RA) is a systemic inflammatory, slowly progressive disease that results in cartilage and bone destruction. Temporomandibular joint (TMJ) involvement is not uncommon in RA although presenting signs & symptoms may vary and occurs in later stages. Hence RA of TMJ present to the dentist with diagnostic challenges. In present literature we report a case of RA with bilateral TMJ involvement with its classical radiographic findings.

Key words: Temporomandibular joint; Rheumatoid arthritis; Rheumatoid factor.

Introduction
Rheumatologic diseases of Temporomandibular joint (TMJ) present to the dentist with diagnostic challenges. Distinguishing between these diseases is important, as the clinical course, long-term prognosis, therapy, and need for referral will vary. The characteristic feature of rheumatoid arthritis (RA) is persistent inflammatory synovitis, usually involving peripheral joints with symmetric distribution (1). TMJ complaints are present in about more than 50% of patients with 3:1 female predilection and peak age incidence in between 35-45 years. There is no known etiology; however combination of infection, autoimmunity and strong genetic factors are associated with the incidence of RA. TMJ is usually among the last joint to be involved and is associated with many clinical signs and symptoms of which pain is a major problem later leading to inflammation, limited movements, gelling (joint stiffness) and muscle spasm (2,3).
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The first presentation of RA may be systemic weight loss, fever, and fatigue. In children it may result in mandibular growth disturbance, facial deformity and ankylosis and in adult, these can vary from mild joint stiffness to total joint disruption with occlusal-facial deformity (1-3). Treatment is complex & multidisciplinary. The goal is to maintain function and to prevent joint and organ damage until the disease enters remission. Treatment may include drug therapy physiotherapy, splint, surgery and education (4-6).

The diagnosis of TMJ involvement in RA is exclusionary based on history, physical findings, radiographic study and lab testing. Hence a multidisciplinary approach is necessary.

The present paper reports a case of RA with bilateral TMJ involvement with its classical radiographic findings.

Case report

A 61 year old malnourished women reported to Department of Oral Medicine and Radiology with the chief complaint of pain and difficulty in mouth opening since 6months. Her past medical and surgical history revealed weight loss, easy fatigue, joint pain with gradual joint deformities and surgical removal of ovarian fibroma. She was kept on penicillin and NSAIDS for 12years and presently was not on any medication.

A pre auricular depression (figure 2) and tenderness on palpation with left TMJ was seen. Oral examination revealed mouth opening of 2.5cm with multiple periodontally compromised root fragments.

Based on the clinical observations provisional diagnosis of bilateral TMJ involvement by RA was given considering Felty's syndrome as differential diagnosis. The patient was subjected to radiologic and laboratory investigations.

Panoramic view showed irregular erosion with decreased joint space of right condyle and pencil head deformity of left condyle (figure 3), Digital Transpharyngeal view of TMJ showed, deossification and erosion of anterior and posterior surface with pencil head or spiked deformity of the left condyle, flattening and erosion of roof of glenoid fossa and superior surface of right condyle (figure 4). Hand wrist radiographs and radiographs of feet revealed periarticular osteoporosis, fusiform soft tissue swelling around proximal interphalangial joints of fingers. Furthermore, narrowing of joint

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Space was observed in wrist joint, intercarpal joints, carpo metacarpal joints, metacarpophalangeal joints and interphalangeal joints. Erosion of ulnar styloid process of left wrist with fusion of carpal and hamate bones, subluxation of metacarpophalangeal joints of index, middle and little finger of left side with hallux varus deformity of both the feet was observed.

Figure 3: Orthopantomograph showing TMJ

Figure 4: Transpharyngeal view showing left TMJ with pencil head deformity and right TMJ with erosion

Laboratory investigations revealed Hemoglobin level of 10.50G/dl and raised ESR to 100mm/1st hour and borderline thrombocytopenia with raised ESR values except for neutropenia. RA Test for rheumatoid factor with turbudometric immunoassay showed 173.40 IU/L [Ref value: up to 10 IU/L], and Anti-nuclear antibody (ANA) test by indirect immunofluorescence method using IFA processor showed positive antinuclear antibody for RA with primary dilution 1:40 and end point titer 1:160. Considering the above reports diagnosis of bilateral TMJ involvement by RA was given. Subsequently, the patient was treated with NSAIDS and corticosteroids and later she was given oral and written instructions for heat and cold therapy and range of motion exercise several times with rest. Furthermore, periodontally compromised root stumps were extracted and flexible dentures were given.

Discussion

RA is a chronic systemic disorder which usually affects people of all ages with peak age incidence reported in between 35 to 45 years. RA is reported to be more common in females as in our case with 3:1 female predilection (1-3).

RA is progressive disorder that involves peripheral joints first in symmetrical pattern and then lastly involves TMJ (5). The clinical course may vary from mild joint discomfort of short duration to chronic polyarthritis, pain and gross deformity of joints with gelling. Chronic inflammation can lead to a loss of cartilage, erosion and weakness of the bones and muscles, resulting in joint deformity, destruction, and loss of function, which were positive in present case with added swan neck deformity of the fingers. Systemically the disease may affect skin, blood vessels, eyes, pleura, lungs, peripheral nerves and endocrine glands (6). Our patient presented with thin dried skin, diplopia, weight loss, and fatigue.

About 50% of the patients with RA will present with TMJ complaints varying from mild joint stiffness to total joint disruption and occlusal-facial deformity (1,3). In accordance, the presenting symptoms in our patient were pain in TMJ and difficulty in mouth opening.

There is no known etiology however combination of infection, autoimmunity and
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strong genetic factors are associated with the incidence of RA. It is seen four times as often in first degree relatives of patient with seropositive disease (1,2). It’s also associated with class II MHC (major histocompatibility) gene complex antigen HLA-DR4 (human leukocyte antigen), even EB (Epstein barr) virus has been associated with RA in some etiologic manner (1,3). There was no pronounced family history in our case. Rarely acute injury, surgeries, and trauma are known to initiate RA (6).

It has been suggested that compression of retrodiscal tissue may be the cause of pain in TMJ, other suggested cause are inflammatory changes secondary to internal derangement, stretching of the joint capsule and synovitis. Inflammation could be the cause of pain in our case. Another source of pain is muscle tenderness expressed as pain if joint is not functioning normally (6,7).

The diagnosis of TMJ involvement with RA is exclusionary based on history, physical findings, radiographic findings and laboratory testing. The radiological changes of TMJ includes cortical erosion, decreased joint space, deossification, pencil head or spiked deformity of the condylar head and sub cortical cysts, which were all positive in our case except for sub cortical cysts. Even bone scanning a radioactive test, MRI and arthrocentesis can demonstrate inflamed or eroded joint (5).

Hematologically certain abnormal blood antibodies are frequently found in patients with RA like "rheumatoid factor" and “ANA” and so in ours. Other significant findings that her blood picture revealed were anemia, borderline thrombocytopenia with raised ESR values except for neutropenia. Other confirmatory tests like citrulline antibody and c reactive protein test are recommended in doubtful cases. Absence of neutropenia and splenomegaly ruled out Felty’s Syndrome in itself and final diagnosis of RA with bilateral TMJ involvement was given.

Though treatment of RA is complex, multidisciplinary and non-curative, the goal is to maintain function, and to prevent joint and organ damage until the disease entry remission. Two classes of medications are used in treating RA: fast-acting "first-line drugs" and slow-acting "second-line drugs" (also referred to as disease-modifying anti-rheumatic drugs or DMARDs) (4,5).

The first-line drugs, such as aspirin and cortisone, are used to reduce pain and inflammation. The slow-acting second-line drugs, such as gold, methotrexate, and hydroxychloroquine promote disease remission and prevent progressive joint destruction, but they are not anti-inflammatory agents. Some newer "second-line" drugs for the treatment of rheumatoid arthritis include leflunomide and the "biologic" medications etanercept, infliximab, rituximab, and abatacept (5).

A balance of rest and exercise is also important. During flare-ups, it is best to rest the involved joints. Guided exercise programs are necessary to maintain flexibility of the joints and to strengthen the muscles that surround the joints. Splinting supports can be helpful in reducing inflammation and maintaining joint alignment. Heat and cold applications can ease symptoms before and after exercise (6). When TMJ is involved, the primary goal is to control synovitis with drug treatment. The dentist role is supportive and to reassure, patients and family are often ignorant of the TMJ as a joint with the potential for arthritic symptoms, hence treatment should be conservative, simple and reversible, conservative treatment guidelines that follow basic orthopedic-rheumatologic principles are heat-cold therapy and range of motion exercise. Sugarless gum can some time provide simple range of motion therapy, Grosfeld recommended prophylactic, orthodontic supervision therapy with monoblock appliances. An orthopedic appliance, physical therapy and medical treatment improved functions of patient.
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Physical therapy exercises have been of help in adult and old RA cases (8-10). Our case was initially treated with NSAIDS and corticosteroids, later she was given oral and written instructions for heat and cold therapy and range of motion exercise several times with rest. Periodontally compromised root stumps were extracted and flexible dentures given.

Surgery may be an option to restore joint mobility, repair damaged joints or in worst case scenarios total artificial joint replacement. In children autogenous grafts and alloplastic prosthesis have been used for TMJ replacement for increasing ramus length, genioplasties with and without onlay grafts are also used to improve the cosmetic result, there are also differences of opinion in the timing of the procedures, all literature reports emphasized long term study and review of these procedures (9,10).

Conclusions

There are many areas of interest to the dentist in treating TMJ involved with RA. However signs and symptoms involving TMJ with RA should be suspected always. Functional examination of the TMJ may often reveal the first clinical symptoms. Further study and research in the orofacial signs of this disease are necessary for optimal diagnosis and treatment.

References