Diagnosis of Rheumatoid Arthritis
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Rheumatoid arthritis (RA) is a chronic multisystem disease of unknown etiology affecting 1% of the world population (1). It involves the peripheral joints of the body in a symmetric fashion and is characterized by persistent inflammatory synovitis. Initially causing pain and swelling of the joints it gradually progresses to cause deformities and disability. Timely diagnosis is of great importance since management of this condition has come a long way with the use of disease modifying drugs for only specific indications in RA previously to being used now at the diagnosis of RA itself. The following can help us in arriving at a proper and timely diagnosis of RA:

1. **History and Examination.** This should be given due importance as is true of any other disease. It commonly affects individuals in the fourth and fifth decades with a predilection for females. Symmetric polyarthritis (especially of the hand joints) is the hallmark of the disease (See fig. 1). The distal interphalangeal joints are spared and so is the spine (except cervical spine). Thus it is surprising to see some doctors particularly orthopedicians labeling a patient with low backache and positive RF as RA. A history of morning stiffness of more than one hour duration and other constitutional symptoms support the diagnosis. One can also find extra articular manifestations like subcutaneous nodules (SN), pleuropulmonary manifestations, vasculitis etc. in RA patients. Of these the finding of SN is quite a helpful diagnostic feature. Found in 20-30% of RA patients they are usually located around the olecranon bursa, proximal ulna or the Achilles tendon (See fig 2). They vary in consistency, are asymptomatic and are found usually in seropositive individuals. Characteristic changes of the hand include (1) radial deviation at the wrist with ulnar deviation of the digits, often with palmar subluxation of the proximal phalanges ("Z"deformity); (2) hyperextension of the proximal interphalangeal joints, with compensatory flexion of the distal interphalangeal joints (swan-neck deformity); (3) flexion contracture of the proximal interphalangeal joints and extension of the distal interphalangeal joints (boutonniere deformity); and (4) hyperextension of the first interphalangeal joint and flexion of the first metacarpophalangeal joint with a consequent loss of thumb mobility and pinch. Typical joint changes may also develop in the feet, including eversion at the hindfoot (subtalar joint), plantar subluxation of the metatarsal heads, widening of the forefoot, hallux valgus, and lateral deviation and dorsal subluxation of the toes. Later in the disease, disability is more related to structural damage to articular structures.

2. **Laboratory findings.** There is no single confirmatory laboratory test to diagnose RA. Rheumatoid factor (RF) is a commonly used test found positive in two thirds of such patients. It is an antibody against the Fc fraction of IgG. Being a non specific test it is found positive in five percent of normal subjects and ten to twenty percent of people above the age of sixty five years(2). This in addition to a myriad of other autoimmune and infectious diseases (3) and even in post vaccination and post transfusion state. It has more of a corroborative rather than a confirmatory role in the diagnosis. Also it has a prognostic significance since high titers signify severe and progressive disease with extra articular manifestations. Unfortunately in our valley some doctors use it as the sole evidence to diagnose RA in non specific joint pains (4) and thus leave the patients in misery. More importantly less than one third patients of RA are not RF positive (seronegative). Thus seronegativity does not rule out the diagnosis of RA. The antibody to CCP (citric citrullinated peptide) is a useful
test to diagnose RA especially in the early stages. It has a sensitivity similar to RF but has a higher specificity (95%) (5). It is a predictor of aggressive and erosive disease (6). Having such a high specificity it is debatable whether it should be included in the ARA criteria or not. It however can be found in 1.5% of normal subjects and in some rheumatic illnesses. Tests like hemoglobin, platelets, ESR etc are usually used to evaluate disease activity.

3. **Radiographic changes:** Such changes vary from soft tissue swelling and effusion in early stages to juxta articular osteopenia and bone erosions as the disease progresses. However none of them is pathognomonic of RA. Their usefulness lies in assessing the extent of cartilage damage and erosions in order to optimize and modify drug therapy. Though 99mTc bisphosphonate bone scanning and MRI can detect early changes in RA their routine use in diagnosis is not recommended.

4. **The American Rheumatism Association (ARA) criteria**

The American College of Rheumatology revised criteria in 1987 to classify RA (7). With a high sensitivity (91-94%) and specificity (89%) it is commonly used to diagnose RA. However it too has limitations like failure to diagnose early RA and inability to effectively discriminate patients with non progressive disease from those who develop disabling and erosive one.

**TABLE 1. The 1987 Revised Criteria for the Classification of RA**

1. **Guidelines for classification**
   a. Four of seven criteria are required to classify a patient as having rheumatoid arthritis (RA).
   b. Patients with two or more clinical diagnoses are not excluded.

2. **Criteria (a)**
   a. Morning stiffness: Stiffness in and around the joints lasting 1 h before maximal improvement.
   b. Arthritis of three or more joint areas: At least three joint areas, observed by a physician simultaneously, have soft tissue swelling or joint effusions, not just bony overgrowth. The 14 possible joint areas involved are right or left proximal interphalangeal, metacarpophalangeal, wrist, elbow, knee, ankle, and metatarsophalangeal joints.
   c. Arthritis of hand joints: Arthritis of wrist, metacarpophalangeal joint, or proximal interphalangeal joint.
   d. Symmetric arthritis: Simultaneous involvement of the same joint areas on both sides of the body.
   e. Rheumatoid nodules: Subcutaneous nodules over bony prominences, extensor surfaces, or juxtaarticular regions observed by a physician.
   f. Serum rheumatoid factor: Demonstration of abnormal amounts of serum rheumatoid factor by any method for which the result has been positive in less than 5% of normal control subjects.
   g. Radiographic changes: Typical changes of RA on posteroanterior hand and wrist radiographs that must include erosions or unequivocal bony decalcification localized in or most marked adjacent to the involved joints.

   (a) Criteria a–d must be present for at least 6 weeks. Criteria b–e must be observed by a physician(2)
Figures 1 and 2 showing hand involvement and SN respectively.

Conclusion:
It is convenient to diagnose RA when symmetric polyarthritis of upper and lower limb joints occurs without involvement of the spine. However it is in the early stages of the illness or in the atypical patient when it is a challenging task. Morning stiffness and subcutaneous nodules are helpful diagnostic features. An isolated positive test like RF or anti CCP should not prompt the physician to diagnose RA unless there is clinical evidence too. Similarly lower back involvement should not be considered for the diagnosis even in RF positive patients. Many a time a wait and watch policy is needed before one is convinced of the diagnosis. Diagnosis depends on finding of corroborative features and exclusion of other conditions. Eventually it is the physician’s assessment that combines clinical features and laboratory tests that helps in the diagnosis.

References
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Conflict of Interest: None.
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