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Diagnosis and classification of rheumatoid arthritis

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ABSTRACT

Rheumatoid arthritis (RA) is a systemic chronic inflammatory disease of unclear etiology that is manifested in by a progressive and destructive polyarthritis in association with serological evidence of autoreactivity. It diagnosis is based on the classification criteria that involves four parameters: joint involvement, serology (rheumatoid factor and anti-cyclic citrullinated peptide -anti-CCP), levels of acute phase reactants and the duration of the symptoms Aletaha, et al. [1]. This classification simplify the categorization of the patients on with early RA, however, the diagnosis requires highly trained specialist who are able to differentiate early symptoms of RA from other pathology.

1. Introduction

Rheumatoid arthritis (RA) is a systemic chronic inflammatory disease of unclear etiology that is manifested in by a progressive and destructive polyarthritis in association with serological evidence of autoreactivity. It is characterized by chronic pain and joint destruction that usually progresses from distal to more proximal joints. The progression of this disease can be slowed down with adequate medical control; however, this condition remains as one of the most important cause of inability and disability if not properly treated.

2. History

As many chronic diseases, the history of rheumatoid arthritis started around 1500 BC when Ebers Papyruralies describe a condition similar to rheumatoid arthritis. Several reports suggest that mommies from different eras have deformities that are pathognomonic of arthritis, however, was not until later 1800 where this chronic condition was named by Garrod rheumatoid arthritis, replacing the terms arthritis deformans and rheumatic gout [2–4]. Thomas Sydenham and later on, Beauvais pointed out that RA has a chronic progressive course especially in the tendon sheaths and bursa causing damage of the bone and cartilage [5].

3. Epidemiology

Rheumatoid arthritis (RA) is distributed universally. There are no reports of areas or ethnic groups in which this disease is not found, and its prevalence does not appear to significantly vary among the groups studied (Table 1). According to latest review, the annual incidence of RA has been reported to be around 40/100,000 worldwide, being women 2:1 to 3:1 more likely to be affected than men [6–8]. Overall the lifetime risk of RA in adults is 3.6 percent (1 in 28) for women and 1.7 percent (1 in 59) for men [9].

4. Pathogenesis

As many other diseases, RA is a combination of genetic and environmental factors that when present increase the susceptibility to develop clinical manifestations.

Genetic factors are linked with a series of genes that carry information that related with RA. These genes are especially those that regulate the HLA major histocompatability complex and some other factors such as cytokine promoters, T cell signaling genes, and many others [17].

The environmental risk factors that have been associated with RA are mainly smoking and alcohol intake, increasing the risk up to 40 times compared with non exposed, however, other factors such as birthweight, breastfeeding, socioeconomic status and region of birth can increase susceptibility [18,19].

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Table 1
Distribution and incidence of RA.

Sociodemographic epidemiology of RA	Trends and references
Women vs men	2:1 to 3:1 [10]
Caucasian from North America	100/100.000 [11]
Rural and urban Africans	20–90/100.000 [12]
Native Americans	500/100.000 [11]
Asians	20–45/100.000 [13]
Caucasian from Europe	5–89/100.000 [14]
Latin America	10–50/100.000 [15]
Middle east countries	10–50/100.000 [16]

5. Classification criteria and clinical manifestations

The classification criteria of RA proposed by the American College of Rheumatology in 1987 differentiated established RA from other rheumatic diseases. The new criteria proposed by the ACR/EULAR in 2010 allows to classify RA on earlier stages (Fig. 1), that permit to prevent bone destruction and radiological progression thanks to the use of disease-modifying drugs [20,21].

Gradual onset polyarthralgia with symmetrical, intermittent and migratory joint involvement, especially in the hands and feet are most typical clinical presentations of RA.

It is important to point out that despite the fact that feet involvement was not part of some of the activity index (DAS28, SDAI, CDAI), feet involvement was included in the EULAR/ACR 2010 classification due to its clinical importance [22].

Symmetrical inflammation of small and large articulations accompanied by morning stiffness it's a common symptoms of RA. At the same time, modern classification criteria contribute in changes of the clinical picture of the disease, increasing amount of seronegative mono- and oligoarthritis as early clinical manifestation and increase risk of false positive diagnostics among patients with autolimiting undifferentiated arthritis [23].

ACR/EULAR 2010 criteria does not determine any other methods for diagnostic of synovitis besides of clinical examination, but insist on a presence of at least one articulation with definitive synovitis. EULAR recommendations for the use of imaging in rheumatoid arthritis states that when there is diagnostic doubt, conventional radiography, ultrasound or MRI can be used to improve the certainty of a diagnosis of RA above clinical criteria alone, MRI and ultrasound can be used to predict the progression from undifferentiated inflammatory to clinical RA, and because of ultrasound and MRI is superior to clinical examination in the detection of joint inflammation, these techniques should be considered for more accurate assessment of inflammation[24].

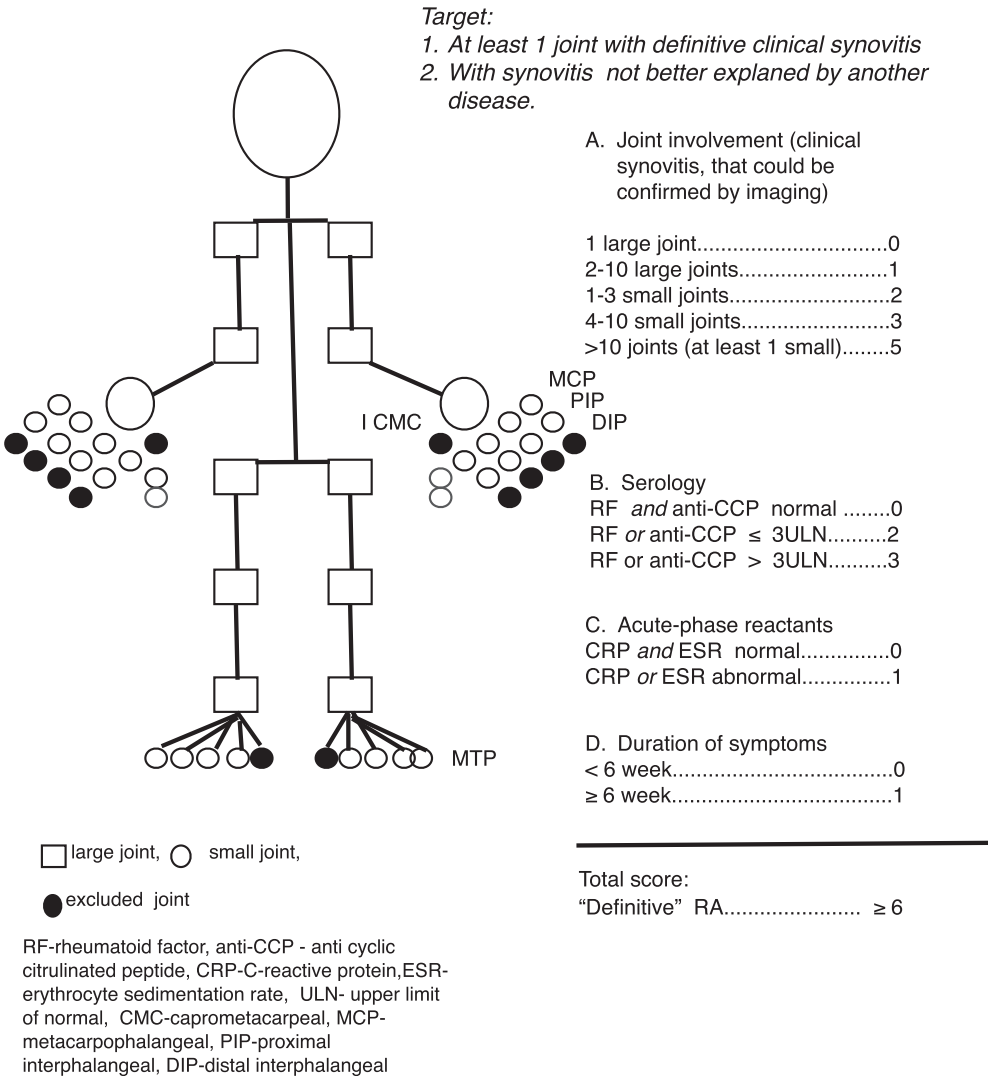

Fig. 1. Classification criteria of RA on earlier stages.