

# Criteria used by primary care physicians for the diagnosis and referral to a rheumatologist of patients with rheumatoid arthritis

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**Introduction:** Rheumatoid arthritis (RA), an important cause of disability, affects 1% of the population. Early diagnosis and referral to a rheumatologist are positive prognostic factor but diagnosis in many cases is in the hands of primary care physicians (PCP).

**Objective:** To determine the criteria used by PCP for diagnosis of RA and referral of these patients to a rheumatologist; to evaluate how many cases can be classified as RA according to the ACR.

**Methods:** Retrospective study of 530 patients referred by PCP and seen as outpatients at a rheumatology clinic in 2002. Patients with referral diagnosis of RA were identified and symptoms, signs, functional capacity and ACR criteria for RA were evaluated by 2 rheumatologists.

**Results:** 302 patients had a referral diagnosis of RA, 33 male (10.9%) and 269 female (89.1%), median age 50.5 years, with a median time since diagnosis of 45.2 months. 57.9% had FC stage II. 100% of cases had "generalized" joint pain, 67.5% arthritis of 3 or more joints and 51.7% arthritis of hand joints. Arthritis was symmetrical in 58.9% and 77.2% of the patients had morning stiffness (> 30 min). 49.7% of the cases had positive rheumatoid factor, 19.2% had a negative RF and 31.1% had none reported. In 2% ESR was measured. X-ray erosions were reported in 6.6% of cases. When using the ACR criteria, 17.8% of patients had 1, 28.7% had 2 and 53.5% had 3 or more criteria. In only 59 cases (20%) did the rheumatologist agree with the referral diagnosis of RA.

**Conclusions:** 80% of PCP referrals of RA to the rheumatologist were another disease. A poor clinical evaluation and little support from laboratory and x-rays was noticed. The delay in diagnosis and referral was 3

years, worsening prognosis. A vigorous effort in educating PCP is needed to achieve early diagnosis and referral of RA cases.

**Key words:** Rheumatoid arthritis. Diagnosis. Primary care physicians.

## Criterios utilizados por médicos de atención primaria para el diagnóstico y derivación al reumatólogo del paciente con artritis reumatoide

**Introducción:** La artritis reumatoide (AR) afecta al 1% de la población y es una importante causa de discapacidad. El diagnóstico temprano y la derivación al reumatólogo son factores pronósticos positivos, aunque en muchos casos el primero corre a cargo de los médicos de atención primaria (MAP).

**Objetivo:** Determinar los criterios empleados por los MAP para el diagnóstico y envío de pacientes con AR a un reumatólogo, así como evaluar cuántos de estos casos pueden clasificarse como AR según los criterios empleados por el Colegio Americano de Reumatólogos (ACR) para ello.

**Métodos:** Análisis retrospectivo de 530 pacientes enviados por MAP y atendidos como pacientes ambulatorios por una consulta de reumatología en 2002. Se identificó a los pacientes con un diagnóstico de envío de AR, y 2 reumatólogos analizaron los síntomas y signos, capacidad funcional y criterios del ACR mencionados en las notas.

**Resultados:** 302 pacientes tenían un diagnóstico de envío de AR, 33 varones (10,9%) y 269 mujeres (89,1%), edad promedio de 50,5 años, con un tiempo de evolución promedio de 45,2 meses. Tenía clase funcional (CF) estadio II el 57,9%. El 100% de las notas mencionaban artralgias "generalizadas", el 67,5% artritis de 3 o más articulaciones y el 51,7% artritis de las manos. La artritis se mencionó como simétrica en el 58,9% de los casos y el 77,2% de los pacientes tenía rigidez matutina (> 30 min), el 49,7% mencionaba un factor reumatoide (FR) positivo,

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el 19,2% un FR negativo y el 31,1% no lo mencionaba. Sólo en el 2% de las notas se mencionaba la velocidad de eritrosedimentación. Las erosiones radiológicas se mencionaron en el 6,6% de los casos. Cuando se emplearon los criterios del ACR, el 17,8% de los casos cumplían un criterio, el 28,7% cumplían 2 y el 53,5% cumplían 3 o más. Sólo en 59 casos (20%) hubo coincidencia entre el diagnóstico de envío y el realizado por los reumatólogos.

**Conclusiones:** El 80% de los envíos de MAP tenía una enfermedad que no era AR. Se notó una evaluación clínica pobre y poco apoyo de auxiliares diagnósticos. Se produjo un retraso de 3 años en el diagnóstico y derivación del paciente, lo que empeoró el pronóstico. Se necesita un esfuerzo vigoroso en educar a los MAP para lograr un diagnóstico temprano y un envío oportuno de los casos de AR.

**Palabras clave:** Artritis reumatoide. Diagnóstico. Médicos de atención primaria.

## Introduction

Rheumatoid arthritis (RA) affects approximately 1% of the global population and is a very important cause of disability. Several studies have shown that early diagnosis of RA and prompt treatment are fundamental to improve the functional outcome and overall prognosis of patients with this disease<sup>1</sup>. Although primary care physicians (PCP) are often in contact and care for patients with RA it has been demonstrated that the patient's prognosis is better if treated by a specialist in Rheumatology<sup>2</sup>. Because primary care physicians come in contact with a wide range of entities and musculoskeletal disease can constitute more than 10% of the visits they receive, establishing syndromic diagnoses becomes an important and careful task. The fact that RA not only benefits from early diagnosis but also from early, aggressive treatment makes this task all the more important.

## Objective

To determine the criteria used by PCP for diagnosis of RA and referral of these patients with a rheumatologist as well as to evaluate how many patients can be classified as RA according to the American College of Rheumatology<sup>3</sup>.

## Methods

Five hundred and thirty consecutive new patients were referred in 2002 by primary care physicians to two

rheumatologists at the Hospital General Regional No. 1 of the Instituto Mexicano del Seguro Social, Cuernavaca, México, a 300-bed regional medical center with generalist, specialist and sub-specialty access. Under normal circumstances patients are referred to a specialist or subspecialist directly by their PCP who, when referring the patient, sends a written evaluation of the patients symptoms, signs, lab and x-ray findings as well as a referring diagnosis on a pre-existing format. This center has two experienced rheumatologists in charge of the outpatient rheumatology clinic. The medical records of these patients were reviewed by the rheumatologists to determine the referring symptoms, signs, laboratory tests, x-ray studies and diagnosis mentioned by the primary care physician in his referral note and then studied each case file to determine the sub-specialists findings both at the initial consultation and during follow up. We selected all new referral notes that had a diagnosis of RA for inclusion, excluding any other diagnosis or non-specific diagnosis. The following criteria were taken into account when evaluating the referral notes: the mention of arthritis in 3 or more joint groups, joint pain, arthritis of the hand joints, symmetrical distribution of the swollen joints, morning stiffness, rheumatoid nodules, rheumatoid factors, presence of joint erosions on x-rays, time since onset of symptoms and functional class<sup>4</sup>. The follow up of patients in the Rheumatology outpatient clinic was of one year (an average of 2.5 visits). No other diagnostic aids (i.e. anti CCP antibodies) were available and therefore were not considered for this study.

The degree of agreement between the rheumatologist and the referring primary care physician for each criterion was evaluated using the kappa statistic (a  $\kappa$  coefficient  $\geq 0.5$  was considered to indicate substantial agreement<sup>5</sup>). Only patients in whom a diagnosis of RA had been stated by the primary care physician in the referral were included for this objective. Non-specific symptoms such as joint pain without swelling were not considered as a disease diagnosis or defined syndrome. The final rheumatologist diagnosis was considered as the "gold standard". Prevalence of RA was defined as the proportion of individuals who had a final RA diagnosis divided by the total sample of patients referred to the rheumatologist with this diagnosis. The performance of the PCP diagnosis was evaluated with a Bayesian approach, estimating sensitivity, specificity, positive predictive and negative predictive values, using the rheumatologist diagnosis as the "gold standard". In this study, sensitivity can be defined as the probability of the PCP detecting a specific rheumatic disease. Specificity can be defined as the probability of the PCP excluding a specific rheumatic disease. Positive predictive value is defined as the probability of having a specific rheumatic disease (diagnosed by a rheumatologist) when diagnosed by a primary care physician. Chi square

re with Yates correction was used to analyze differences in proportions.

## Results

Five hundred and thirty referral notes were analyzed and 302 had a referral diagnosis of RA. Most were women (269; 89.1%) with a median age of 50.5 years (SD  $\pm$  13.06). The time since the onset of symptoms was  $46.2 \pm 43.7$  months. This represented their first visit to a rheumatologist. The remaining 228 cases had a referral diagnosis that was not RA or was not specified.

All of the referral notes mentioned at least one clinical feature of the disease (sign or symptom). The most commonly mentioned clinical feature was joint pain (100%), followed by hand involvement (48.3%), symmetry of joint involvement (41.1%), arthritis (32.5%), morning stiffness (22.6%) and rheumatoid nodules (2.3%) (table 1). The PCPs positive predictive value was 0.19 and their negative predictive values was 0.8; prevalence in this study was 0.11%.

With respect to the use of diagnostic aids, Rheumatoid Factor (RF) was mentioned in 244 of the referral notes that had the diagnosis of RA (81.8%). Erythrocyte sedimentation rate (ESR) was mentioned in only 6 cases (2%) and C-reactive protein (CRP) was not mentioned in none. Only 20 referral notes with the diagnosis of RA mentioned bony erosions (6.6%).

Only 59 (19.5%) of the 302 referral notes with a diagnosis of RA mentioned 4 or more ACR criteria needed for the classification of this disease. Most of the referral notes only mentioned one criteria (28.7%) and in 17.8% of the cases no criteria were mentioned (fig. 1). Of the patients whose referral notes mentioned other diseases (not RA), less than 5% were classified as RA by the rheumatologists.

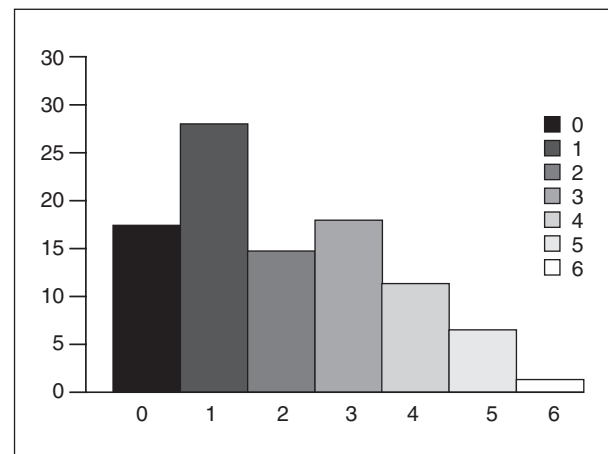
Agreement between the PCP and the rheumatologists' diagnosis of RA as well as agreement on the use of individual clinical, laboratory and x-ray features of the disease is shown in table 2. Overall agreement on the diagnosis of RA between the PCP and the rheumatologist was poor ( $\kappa = 0.02$ ;  $p < 0.05$ )

## Discussion

The purpose of this study was to examine the clinical and auxiliary features used by PCP in the diagnosis of RA and to establish the degree of agreement between them and the rheumatologist concerning the aforementioned disease. In 2002 there were 520 consecutive referrals to two rheumatologists at a public general hospital in Cuernavaca, México, for diverse reasons. Of these, 302 had a referral diagnosis of RA. These referral notes included at least one clinical feature but not

**TABLE 1. Clinical features mentioned in referral notes**

| Clinical Feature    | Referral notes where it is mentioned (%) |
|---------------------|--|
| Arthritis           | 32.5                                     |
| Hand involvement    | 48.3                                     |
| Simmetric arthritis | 41.1                                     |
| Rheumatoid nodules  | 2.3                                      |
| Morning stiffness   | 22.6                                     |
| Joint pain          | 100                                      |



**Figure 1.** Number of ACR criteria mentioned in referral notes with a diagnosis of RA.

**TABLE 2. Diagnostic agreement between the primary care physicians and the rheumatologist**

|                        | %    | $\kappa$ | p      |
|------------------------|------|----------|--------|
| Rheumatoid factor      | 69.7 | 3        | < 0.05 |
| Hand involvement       | 48.6 | 0.53     | < 0.05 |
| Simmetry               | 41.1 | 0.35     | < 0.05 |
| Arthritis > 3 joints   | 32.5 | 0.32     | < 0.05 |
| Morning stiffness      | 22.8 | 0.02     | < 0.05 |
| Bony erosions on x-ray | 6.6  | 0.14     | < 0.05 |
| Rheumatoid nodules     | 2.3  | 0.18     | < 0.05 |
| Overall                | 19.5 | 0.02     | < 0.05 |

necessarily mentioned the results of any diagnostic aids. We selected the rheumatologist diagnosis as the "gold standard" for the diagnosis of RA. A problem with our choice of "gold standard" is that the final rheumatologist diagnosis may have been influenced by the diagno-

sis mentioned on the referral note since the rheumatologists were not blinded to the PCP diagnosis<sup>6</sup>. In this case, if bias occurred, a greater number of inaccurate diagnoses would be expected to occur. Overall, in 80.5% of the cases, PCP and rheumatologists disagreed on the diagnosis. Rheumatologists had the advantage of a longer follow-up on cases and in some patients an evolving course and worsening or improving symptoms over time. Nevertheless disagreement was common in a disease which in established cases has clear and specific signs and symptoms and has some characteristic features at onset.

When analyzed individually, PCP tended to pay attention to non-specific signs (such as joint pain) or signs that were obvious or that caused important limitation (hand involvement). Diagnostic aid use was not widespread enough and only took into account rheumatoid factor. There was no significant agreement on the use of any other laboratory or radiological method to help in the diagnosis of RA. No evidence of an integral approach to the patient<sup>7</sup>, or the grouping of signs and symptoms into syndromes was found.

Although the ACR criteria for classification of RA are not meant to be diagnostic, they have been proposed as “guidelines” to the clinical evaluation of RA. Nonetheless we found no evidence that this is so since they were rarely taken into account by the referring PCP of our study and most patients were sent with only one or two of the criteria for classification as RA. Since sending the patient with a diagnosis of RA does not shorten his or her time on the waiting list we did not believe this to be the reason so many incorrect referral diagnosis were made.

A few other studies have also studied diagnostic patterns of rheumatic diseases in primary care. Two Swedish studies<sup>8,9</sup> in 1981 and 1983 showed wide variation in the inclusion of tentative diagnoses by PCP: from 20 to 90%. Both studies reported low agreement between rheumatologists and PCP. A Spanish study<sup>10</sup> in 422 patients reported that more than 50% of primary care diagnoses were modified at the rheumatology clinic. A Canadian study<sup>11</sup> in 149 patients described low sensitivity for many diagnoses. Another common finding was the frequent confusion of connective tissue diseases with other musculoskeletal disorders, including some with very different clinical characteristics. More recently in 1998 a group in Canada<sup>12</sup> found agreement between PCP and rheumatologists to be 46%. It is clear from these studies that PCP in various countries continue to show difficulties in the diagnoses of musculoskeletal disorders.

PCP generally are the initial health care contact for patients with rheumatic disease. A number of health rela-

ted decisions and interventions can arise from their diagnoses; referrals, diagnostic tests, therapies and patient counseling. Costs of inadequate diagnoses and treatment can contribute to inappropriate and inefficient resource use<sup>13</sup>. In addition, a delay in the diagnosis may result may result in a lower response to therapy, disease progression and disability, as is the case in RA<sup>14</sup>.

We have shown that PCP misdiagnose RA. Major concerns from this include patient “labeling” and distress, excessive and inefficient use of diagnostic tests and referrals, and inappropriate therapies with potential for toxicity, as well as significant therapeutic delays.

PCP deal with a very large number of patients and conditions, and cannot be expected always to be accurate in their diagnoses. Nevertheless, most primary care referrals to rheumatologist labeled as RA include patients with some other condition. Since inaccurate diagnoses in referred patients seem to be frequent, an increased emphasis in medical education on the assessment of musculoskeletal disorders is suggested to improve the efficiency of referrals to rheumatologists.

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