Outcome of Early Monoarthritis: A Followup Study

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ABSTRACT. ***Objective.*** To evaluate clinical, laboratory, and radiological features and outcomes in patients with monoarthritis (MA), identified in a cohort of patients with early arthritis.

Methods. A cohort of 270 patients with undiagnosed arthritis of less than 1 year's duration was divided into 3 groups: single episode of MA (MA, n = 27), MA with a history of patient-reported arthritis (MA + past, n = 23), and oligo- or polyarthritis (OA/PA, n = 220). At 6-month intervals, all patients underwent a standardized examination, radiographs, and standard laboratory tests including rheumatoid factors (RF), antiperinuclear factor (APF), antikeratin antibody (AKA), anticyclic citrullinated peptide antibody (anti-CCP), antinuclear antibodies, and HLA-AB-DR typing. After a median followup of 30 months, the diagnosis was evaluated by a hospital-based rheumatologist.

Results. Age and sex did not differ across the 3 groups. Knee involvement was more common in the MA group than in the MA + past group ($p < 0.03$), whereas hand and metatarsophalangeal involvement was less common ($p < 0.03$ and $p < 0.0001$, respectively). RF and anti-CCP were less often positive in the MA group than in the MA + past group ($p < 0.02$ and $p < 0.001$, respectively) and the OA/PA group ($p < 0.02$ and $p < 0.03$). No patient in the MA group received a diagnosis of rheumatoid arthritis (RA). RA was less common and disease modifying antirheumatic drugs were prescribed less often in the MA group than in the other 2 groups ($p < 0.0001$ for both comparisons).

Conclusion. The MA group was clearly different from the other groups, with a favorable outcome and no risk of progression to RA. (First Release Nov 1 2007; J Rheumatol 2007; 34:2351–7)

Key Indexing Terms:
MONOARTHRITIS
EARLY SYNOVITIS
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UNDIFFERENTIATED ARTHRITIS

Monoarthritis (MA) is inflammation in a single joint. Because MA can occur as the presenting manifestation of most joint diseases, it raises challenging diagnostic problems. Acute MA should be taken as indicating pyogenic joint infection, which is a medical emergency, until proven otherwise. Nevertheless, most patients with MA seen in everyday practice have neither joint infection nor crystal deposition disease, and the course is usually subacute or chronic (more than 3 mo duration)[1]. Subacute or chronic MA can be the initial manifestation of a systemic connective tissue disease.

Outcomes of patients with early arthritis have been studied mainly in patients with oligo- or polyarthritis, and the emphasis has usually been on rheumatoid arthritis (RA)[2-6]. Few prospective studies of outcomes in patients with early MA followed up since symptom onset are available (Table 1)[7-20]; only one is recent[19].Our objectives were to determine (1) the prevalence of MA in a cohort of patients with early arthritis, (2) the measures associated with this particular clinical presentation when compared to 2 other clinical presentations (oligo/polyarticular involvement, MA with a self-reported history of arthritis), and (3) the outcome of the 3 predefined clinical presentations in terms of remission: that is, probability of receiving disease modifying antirheumatic drugs (DMARD), probability of fulfilling the American College of Rheumatology (ACR) RA classification criteria[21], and probability of detecting another well recognized disease such as spondyloarthropathy (SpA) and connective tissue disorder.

MATERIALS AND METHODS

Study population. Our study cohort was composed of patients first evaluated for early arthritis in 1995-97 in 7 hospitals in Brittany, France. All patients were referred by general practitioners or rheumatologists who had been informed of the study. Inclusion criteria were as follows: age 18 years or older, synovitis of at least one joint, absence of a previous diagnosis of joint disease, and disease duration no greater than 1 year. Patients were excluded

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Table 1. Previous studies of outcomes in patients with monoarthritis.

Study	No. Patients	Arthritis Distribution, %				Diagnosis, %				Full Recovery, %
		Knee	Wrist	Hip	Other	RA	SpA	PsA	UA	
Pitkeathly[7] RS	45	60.0	15.5	11.1	13.4	27.0	0.0	9.0	9.0	16.0
Lequesne[8] RS	47	65.9	21.3	0.0	12.8	40.0	2.0	6.0	49.0	34.0
Cayla[9] RS	80	72.5	10.0	2.5	15.0	40.0	7.5	3.75	35.0	45.0
Serre[10] RS	50	66.0	8.0	10.0	16.0	22.0	2.0	6.0	70.0	50.0
David-Chaussé[11] RS	22	68.2	13.6	0.0	18.2	13.6	4.56	—	68.2	18.2
Auquier[12] RS	173	55.5	8.7	7.5	28.3	15.6	5.7	2.3	57.8	43.9
Iguchi[13] RS	84	68.0	18.0	6.0	8.0	15.0	—	—	40.4	—
Rasmussen[14] RS	65	75.3	1.5	13.8	9.4	6.1	1.5	—	70.8	76.0
Fletcher[15] RS	151	74.1	6.6	—	—	9.0	—	32.0	—	—
Kaarela[16] FS	32	62.5	3.1	0.0	34.4	6.0	3.1	0.0	90.9	—
Blocka[17] FS	38	60.5	7.9	—	—	7.9	15.8	0.0	68.4	26.3
Hülsemann[18] FS	24	—	—	—	—	0.0	12.5	8.3	66.7	—
Devlin[19] FS	13	100.0	—	—	—	0.0	—	—	—	100.0
Inaoui[20] RS	46	54.3	26.1	—	—	17.4	15.0	6.5	10.9	50.0
Binard FS	27	63	14.8	14.8	7.4	0.0	18.5	11.1	29.6	40.7

RA: rheumatoid arthritis; SpA: spondyloarthropathy; PsA: psoriatic arthritis; UA: undifferentiated arthritis; RS: retrospective study; FS: followup study.

from the study if septic arthritis or crystal-induced arthritis could be suspected from the medical history and the examination. Arthritis was clinically diagnosed by a rheumatologist and was defined as the presence of the following clinical criteria: swelling and tenderness or decreased range of motion. The study was approved by the appropriate ethics committee, and all patients gave their written informed consent.

Baseline assessment. All patients had a standardized interview, a general examination, and a rheumatological examination during which over 100 measures were collected, including present and past medical history, family history of RA or SpA, synovitis, and ACR RA classification criteria[21].

We separated the study population into 3 groups: patients with a single continuous episode of MA from symptom onset to the first visit (MA group), patients with MA at the first visit and in the last year a self-reported history of arthritis [MA + past group: all had joint pain suggesting a history of arthritis during the past year (not before); none of these patients had previously been diagnosed as having arthritis before the confirmation of their current MA], and patients with oligo- or polyarthritis at the first visit (OA/PA group).

Radiographs of the chest, pelvis, hands, and feet were obtained. The following laboratory tests were performed: blood cell counts; serum C-reactive protein (CRP); serum creatinine; proteinuria; HLA-AB-DR type; rheumatoid factor (RF) measured using the latex test and in-house ELISA specific for the IgG, IgM, and IgA isotypes; tests for antiperinuclear factor (APF); antikeratin antibody (AKA) detected by indirect immunofluorescence; anti-RA33 antibody (anti-RA33); anticyclic citrullinated peptide antibody (anti-CCP), and antinuclear antibody (ANA) using a standard immunofluorescence test on HEp-2 cells. Sera with an ANA titer of 1/20 or more were tested for antibodies to the following antigens: double-stranded DNA, Sm, RNP, SSA, SSB, Jo1, and Scl-70.

Followup. Each patient was followed by a rheumatologist at 6-month intervals until a clinical diagnosis of a specific joint disease was made and the patient met published criteria for the same joint disease. Each evaluation included a standardized interview; a general examination; a rheumatological examination including evaluation of ACR criteria for RA; radiographs of the hands and feet; and tests for RF, APF, AKA, anti-CCP, anti-RA33, and ANA. The patients were asked to attend a final visit between June and November 1999. After this last visit, a hospital-based rheumatologist determined the final diagnosis based on all the data available for each patient[22] and on the following classification criteria: ACR RA classification criteria[21], European Spondylarthropathy Study Group (ESSG) criteria[23], ACR systemic lupus erythematosus (SLE) classification criteria[24,25], Vitali and coworkers' criteria for Sjögren's syndrome[26], Jones and Hazleman's criteria for polymyalgia rheumatica[27], Bohan and Peter's criteria for polymyositis/dermatopolymyositis[28], and ACR criteria for scleroderma[29].

Statistical analysis. As described[22], all patients were evaluated for analysis, after a median followup of 30 months [< 1 yr in 16 cases (6%), 1–2 yrs in 21 (8%), and > 2 yrs in 233 (86%)]. Results for quantitative variables are reported as the means ± standard deviation, results for qualitative variables as the number of patients per category (and/or percentage of patients). Patient groups were compared using the chi-square test or the Mann-Whitney test, as appropriate. P values < 0.05 were considered statistically significant. Statistical tests were performed using the Statistical Package for the Social Sciences (SPSS 13.0, 2005; SPSS Inc., Chicago, IL, USA).

RESULTS

Of the 270 patients in our cohort of patients with inflammatory joint disease, 50 had MA, and among these 50 patients 27 had MA from symptom onset to the first visit (MA group) and 23 had MA at the first visit and a self-reported history of arthritis (MA + past group). The remaining 220 patients had oligo- or polyarthritis at the first visit (OA/PA group). 11/27 MA and 7/23 MA + past were persistent at the last visit, and 1/27 MA and 5/23 MA + past were considered as erosive by the rheumatologist at the last visit. The age and sex distributions were not significantly different among the 3 groups (Table 2). Females predominated in all 3 groups: the sex ratio was 1.6, 1.8, and 1.4 in the MA, MA + past, and OA/PA groups, respectively.

Table 2 shows the distribution of affected joints. In the MA group, the knee was the most commonly involved joint (n = 17), followed by the wrist (n = 4), and the hip (n = 4). Knee involvement was more common ($p < 0.03$) in the MA group than in the MA + past group, whereas hand and metatarsophalangeal involvement was less common ($p < 0.03$ and $p < 0.0001$, respectively). We did not compare the distribution of arthritis in the MA group and OA/PA group because of the bias introduced by the involvement of multiple joints in the OA/PA group. Extraarticular manifestations were present in

Table 2. Mean age, sex ratio, number of affected joints, and number of patients with extraarticular manifestations in our 3 groups.

	MA, n = 27	MA + past, n = 23	OA/PA, n = 220
Mean age, yrs	47.96 ± 16.94	48.78 ± 12.18	49.92 ± 16.56
Females/total	17/27	13/23	154/220
No. affected joints/total number of joints			
Knee	17/54*	6/46*	57/440
Wrist	4/54	3/46	123/440
Hip	4/54	0/46	2/440
Ankle	1/54	4/46	64/440
Elbow	0/54	1/46	23/440
Hand	1/810**	7/690**	128/6600
MCP	0/270	2/230	359/2200
PIP	1/270	4/230	202/2200
DIP	0/270	1/230	30/2200
MTP	0/270***	2/230***	78/2200
Shoulder	0/54	0/46	6/440
Extraarticular symptoms	10/27	5/23	62/220
Weight loss	0	0	2
Asthenia	1	0	1
Fever	1	0	3
Lymphadenopathy	0	0	2
Psoriasis	3	3	16
Oral ulcers	1	0	1
Vitiligo	0	0	2
Livedo reticularis	0	0	2
Photosensitivity disorders	2	0	17
Raynaud's phenomenon	2	4	46
Uveitis	0	1	0
Conjunctivitis	4	0	14
Diarrhea	1	0	7
Heel spur	0	0	5
Tendinitis	0	0	2
Other manifestations	6	4	33

* MA vs MA + past, $p < 0.03$, ** MA vs MA + past, $p < 0.03$, *** MA vs MA + past, $p < 0.0001$. MCP: metacarpophalangeal joints; PIP: proximal interphalangeal joints; DIP: distal interphalangeal joints; MTP: metatarsophalangeal joints; hand arthritis, MCP, PIP, and DIP. MA: monoarthritis from symptom onset to the first visit. MA + past: monoarthritis at the first visit and patient-reported history of OA/PA. OA/PA: oligo- or polyarthritis at the first visit.

37% of patients in the MA group, 21.7% of those in the MA + past group, and 28.2% of those in the OA/PA group (Table 2); these prevalences were not significantly different.

Mean levels of erythrocyte sedimentation rate (ESR) and serum CRP were not statistically different between the 3 evaluated groups of patients (data not shown). In contrast, significant differences between the MA group and the other 2 groups were found for immunological test results. RF latex, anti-CCP, and APF were positive in 1, 1, and 4 patients in the MA group, respectively (Table 3). For both RF and anti-CCP, positive results were less common in the MA group than in the other 2 groups (MA + past group: $p < 0.02$ and $p < 0.001$, respectively; and OA/PA group: $p < 0.02$ and $p < 0.03$). APF was less often present in the MA group than in the OA/PA group ($p < 0.04$; Table 3). No statistically significant differences were identified across the 3 groups for RF ELISA, AKA, HLA-DR4 haplotype, and positive HLA-B27 antigen [testing for HLA-B27 was positive in only 18/56 (32%) of those finally classified as having SpA by their rheumatologist as compared to 15/214 (7%) of the others].

After the last visit, a hospital-based rheumatologist evaluated the final diagnosis based on all the data available for each patient (Table 4). Table 5 shows the number of patients fulfilling ACR criteria for RA or ESSG criteria at baseline and at followup, according to the diagnosis of RA or SpA made at the last visit. Among the 114 patients who were assigned to the RA group, 96 (84%) met the ACR criteria (i.e., ≥ 4 criteria were met) at last visit. Of the 56 patients who were assigned to the SpA group, 45 (80%) fulfilled ESSG criteria at followup. In the MA group, SpA was the most common diagnosis (8/27, 29.6%). In this group, 8 (29.6%) patients had no diagnosis at completion of followup and were classified as having undifferentiated inflammatory arthritis. Two patients had chondrocalcinosis. There was one case each of Lyme dis-

Table 3. Immunological test results in the 3 groups.

	MA, n = 27 (%)	MA + past, n = 23 (%)	OA/PA, n = 220 (%)
Positive HLA-DR4	13/27 (48.1)	12/20 (60.0)	93/207 (44.9)
Positive HLA-B27	2/27 (7.4)	3/23 (13.0)	28/220 (12.7)
Positive RF latex	1/27* (3.7)	7/23* (30.4)	50/216* (23.1)
Positive RF ELISA	3/27 (11.1)	8/22 (36.4)	57/205 (27.8)
Positive anti-CCP	1/27** (3.7)	10/22** (45.4)	45/214** (21.0)
Positive AKA	2/27 (7.4)	5/20 (25.0)	44/201 (21.9)
Positive APF	4/27*** (14.8)	8/21 (38.1)	70/205*** (34.1)

* MA vs MA + past and MA vs OA/PA, $p < 0.02$, ** MA vs MA + past, $p < 0.001$, and MA vs OA/PA, $p < 0.03$, *** MA vs OA/PA, $p < 0.04$. RF: rheumatoid factors; anti-CCP: anticyclic citrullinated peptide antibody; AKA: antikeratin antibody; APF: antiperinuclear factor. MA: monoarthritis from symptom onset to the first visit. MA + past: monoarthritis at the first visit and patient-reported history of OA/PA. OA/PA: oligo- or polyarthritis at the first visit.

Table 4. Final diagnosis after the last visit in the 3 groups.

Diagnosis	MA, n = 27	MA + past, n = 23	OA/PA, n = 220
Rheumatoid arthritis	0*	14*	100*
Spondyloarthropathy	8	3	45
Undifferentiated arthritis	8**	4	24**
Polymyalgia rheumatica	1	0	2
Vasculitis	1	0	0
Sicca syndrome	1	0	5
Lupus erythematosus	1	0	4
Scleroderma	1	0	1
Sarcoidosis	1	0	1
Lyme disease	1	0	0
Polymyositis	0	0	4
Chondrocalcinosis	2	0	5
Gouty arthritis	0	1	3
RSDS	1	0	0
Gammopathy	1	0	0
Viral	0	1	0
Other	0	0	26

* MA vs MA + past and MA vs OA/PA, $p < 0.0001$. ** MA vs OA/PA, $p < 0.001$. MA: monoarthritis from symptom onset to the first visit. MA + past: monoarthritis at the first visit and patient-reported history of OA/PA. OA/PA: oligo- or polyarthritis at the first visit. RSDS: reflex sympathetic dystrophy.

Table 5. Number of patients fulfilling ACR criteria for rheumatoid arthritis (RA) or European Spondylarthropathy Study Group (ESSG) criteria at baseline and at followup according to the diagnosis of RA or spondyloarthropathy (SpA) made at the last visit.

	RA, n = 114 (%)	Not RA, n = 156 (%)
At first visit, ACR criteria + (n = 96)	70 (61)	26 (17)
At last visit, ACR criteria + (n = 131)	96 (84)	35 (22)
	SpA, n = 56 (%)	Not SpA, n = 214 (%)
At first visit, ESSG criteria + (n = 50)	37 (66)	13 (6)
At last visit, ESSG criteria + (n = 58)	45 (80)	13 (6)

ACR criteria +: presence of at least 4 criteria. ESSG criteria +: presence of at least one major and one minor criterion.

ease, sarcoidosis, SLE, vasculitis, polymyalgia rheumatica, Sjögren's syndrome, reflex sympathetic dystrophy (at the end of followup the physician could not exclude that this pathology was a complication of an initial MA), gammopathy (probable but undetected cryoglobulinemia), and scleroderma. No patient in the MA group was given a diagnosis of RA, which was the most common diagnosis in the MA + past group (14/23, 60.9%) and in the OA/PA group (100/220, 45.4%). The diagnoses in the 9 remaining patients in the MA + past group were SpA (n = 3), gouty arthritis (n = 1), viral infection (n = 1), and undifferentiated inflammatory arthritis (n = 4). In the OA/PA group, the second most common diagnosis after RA was SpA (45/220, 20.4%), and 24 patients had no diagnosis after the last visit. The clinical and laboratory features in the MA + past group closely resembled those in the OA/PA group (Table 6). RA was significantly less common in the MA group (0/27) than in the other 2 groups ($p < 0.0001$). The prevalence of SpA was not significantly different across the 2 groups. Undifferentiated inflammatory arthritis was more common in the MA group than in the OA/PA group ($p < 0.001$).

Prescription of intraarticular steroid injections was systematic for MA (MA and MA + past group), after failure of nonsteroidal antiinflammatory drugs, in this study. The arthritis resolved in 40.7% of patients in the MA group and 30.4% of those in the MA + past group. Overall, 36.0% of patients achieved a complete remission. In the MA group, oral glucocorticoid treatment was used alone in 4 cases and in combination with salazopyrine in 1 patient; the remaining 22 patients required only symptomatic treatment. DMARD were less often prescribed to patients in the MA group (1/27) than to patients in the MA + past group (11/23) or OA/PA group (108/220) ($p < 0.0001$).

DISCUSSION

The diagnostic approach to acute MA has been discussed elsewhere[30-32]. Subacute or chronic MA, usually defined as having a duration of more than 3 months[1], may indicate either a localized inflammatory process or the onset of a joint disease that may extend to other joints. To evaluate the clinical and laboratory features and the outcomes of MA, we separated our cohort of 270 patients with early arthritis seen in Brittany, France, into 3 groups: a group with MA as the only joint manifestation from symptom onset to the first visit, a group with MA at the first visit but a patient-reported history of arthritis, and a group with oligo- or polyarthritis at the first visit. The fact that all our patients were recruited in the same geographic area is a limitation of our study. Further, the followup (median followup 30 mo) may have been too short to identify all the cases of conversion from MA to oligo- or polyarthritis.

We included only adult patients (18 yrs or older) with disease onset within the last year and no previous diagnosis of joint disease, in keeping with most of the recent studies[2,4,33]. At inclusion, 50 patients had MA (MA and MA + past groups); their age and sex distributions were similar to those noted in previous studies[9,13,32]. We did not find any statistically significant differences across the 3 groups regarding age or sex distributions. The knee was the main target of MA (Table 1), although the prevalence of knee arthritis (46.0%) was lower than in earlier studies (54.3% to 74.1%). The second and third most commonly involved joint sites were the wrist and hip. The MA group was characterized by lower prevalences of hand arthritis ($p < 0.03$) and metatarsophalangeal arthritis ($p < 0.001$) compared to the MA + past group, whereas the prevalence of knee arthritis was higher ($p < 0.03$).

Table 6. Comparison of clinical and laboratory features in the 2 groups with monoarthritis (with and without history of arthritis).

Joints Involved	F	M	Positive HLA-B27	Positive HLA-DR4	Positive Immunological Tests: RF IgM	CCP	AKA	APF	RF Latex	Diagnosis: RA	SpA	Full Recovery
MA, n = 27												
Knee (n = 17)	11	6	2/17	6/17	3/17	1/17	2/17	2/17	1/17	0/17	4/17	7/17
Wrist (n = 4)	1	3	0/4	3/4	0/4	0/4	0/4	0/4	0/4	0/4	0/4	0/4
Hip (n = 4)	3	1	0/4	3/4	1/4	0/4	0/4	0/4	0/4	0/4	0/4	3/4
Ankle (n = 1)	1	0	0/1	1/1	0/1	0/1	0/1	0/1	0/1	0/1	1/1	0/1
PIP (n = 1)	1	0	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	1/1
MA + past, n = 23												
Knee (n = 6)	2	4	0/6	3/5	2/6	3/6	3/5	2/5	2/6	3/6	0/6	2/6
Wrist (n = 3)	1	2	0/3	0/2	1/2	0/3	1/3	1/3	1/3	1/3	0/3	1/3
Ankle (n = 4)	3	1	0/4	3/4	0/4	2/4	0/4	2/4	0/4	1/4	1/4	2/4
Elbow (n = 1)	0	1	0/1	1/1	1/1	1/1	1/1	0/1	1/1	1/1	0/1	0/1
MCP (n = 2)	1	1	1/2	2/2	2/2	2/2	0/2	1/2	2/2	2/2	0/2	0/2
MTP (n = 2)	1	1	1/2	1/2	0/2	1/2	0/1	1/1	0/2	0/2	0/2	2/2
PIP (n = 4)	4	0	1/4	2/3	1/4	1/3	0/3	1/4	1/1	2/4	1/4	0/4
DIP (n = 1)	1	0	0/1	0/1	1/1	0/1	0/1	0/1	1/1	1/1	0/1	0/1

MCP: metacarpophalangeal joints; PIP: proximal interphalangeal joints; DIP: distal interphalangeal joints; MTP: metatarsophalangeal joints. RF IgM: IgM rheumatoid factor by ELISA; Latex: rheumatoid factors by latex test; anti-CCP: anticyclic citrullinated peptide antibody; AKA: antikeratin antibody; APF: antiperinuclear factor. MA: monoarthritis from symptom onset to the first visit. MA + past: monoarthritis at the first visit and patient-reported history of OA/PA.

This distribution is consistent with the fact that RA was the most common diagnosis in the MA + past and OA/PA groups.

In our population and in previous studies[13], the severity of inflammation as evaluated by the ESR and CRP level was not useful for establishing the diagnosis or prognosis of MA. However, immunological test abnormalities were less common in the MA group than in the other 2 groups. Thus, the rates of positive results for RF latex, anti-CCP, and APF were lower in the MA group compared to the other groups, whereas most of the earlier studies concluded that these tests failed to predict the outcome of MA[20].

All patients with arthritis had synovial fluid analysis in this study as soon as it was possible. Nevertheless, the patients having a clear diagnosis of septic arthritis or crystal-induced arthritis confirmed by synovial fluid analysis were excluded. So the diagnosis value of this test, although important, has not been evaluated.

Testing for HLA-B27 might seem useful to support a diagnosis of SpA in patients with chronic MA. However, the prevalence of HLA-B27 in our study did not differ significantly across the 3 groups. Only 5 of the 50 patients with MA tested positive for HLA-B27 antigen; this prevalence reflects that in the overall population of Brittany and is lower than the 17% to 39% prevalences in earlier studies[16,20]. In a study by Inaoui, *et al*[20], HLA-B27-positive status was associated with progression to SpA. It is interesting that HLA-DR4 and HLA-B27 were at the same frequency between the groups; nevertheless a third of patients with MA had a diagnosis of SpA and we would have expected a lower frequency of HLA-DR4 and a higher frequency of HLA-B27 in the MA group. The low percentage of HLA-B27-positive patients in the group considered as having SpA is probably explained by the characteristics of the arthritis localization (peripheral arthritis, without clinical axial involvement at baseline)[34].

Lyme serology, hepatitis B and C, parvovirus B19, and human immunodeficiency virus were not systematically investigated in this study. So the results of these tests were not computerized and we cannot verify them. Nevertheless, rheumatologists in France generally prescribed these tests in early mono-oligoarthritis, and only one patient with MA had Lyme disease.

A diagnosis was established at last followup in 38 (70.6%) of the 50 patients with MA. Of the 12 patients with no diagnosis, 8 were in the MA group and 4 in the MA + past group. The proportion of patients with no diagnosis ranged in earlier studies from 9.0% to 90.9%[7,16]. In many studies, RA was the most common diagnosis, with 6% to 40% of patients (Table 1). Our series is clearly different from previous ones, except the studies of Hulsemann and Zeidler[18] and Devlin, *et al*[19], because no cases of RA were diagnosed in the patients who experienced a single continuous episode of MA. In this group, the most common diagnosis was SpA, which had the same prevalence as undifferentiated inflammatory arthritis. In contrast, RA was the most common diagnosis in patients with a history of arthritis or with oligoarthritis and/or polyarthritis at the first visit (60.9% and 45.4%, respectively); SpA was the second most common diagnosis. SpA was diagnosed in 11 (22.0%) of our patients; this frequency seems higher compared to earlier studies (Table 1)[7-12,14,16-18,20]; however, the comparison with previous reports is difficult because diagnostic criteria for SpA have changed over the years and may be partly subjective. Undifferentiated arthritis is more common than RA in everyday practice and remains a challenge for clinics managing patients with early synovitis and rheumatic diseases. The other main diagnoses were systemic connective tissue diseases such as lupus erythematosus[35], vasculitis, Lyme disease[36], sarcoidosis, and Behçet's disease[37].

Although the prognosis is difficult to establish in patients with MA, our results support earlier reports that the outcome is usually favorable[13,15-17]. In the MA group, no patient progressed to oligo- or polyarthritis during followup, and 40.7% achieved a full recovery within a few months, compared to 30.4% in the MA + past group and 36.0% for the overall population with MA. Blocka and Sibley[17] reported a lower full recovery rate of 26.3% and Rasmussen, *et al* a higher rate of 76.0%[14]. Our findings support earlier studies indicating that the favorable outcome of MA, with no risk of progression to RA, warrants a simple treatment regimen consisting of analgesics combined, if needed, with glucocorticoid therapy.

Our data suggest that most patients with isolated MA are not at risk for progression to RA, whereas in those with a history of joint swelling the risk of RA is at least as high as in patients with oligo- or polyarthritis. Undifferentiated MA carries a good prognosis and does not require treatment with DMARD.

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