

Clinical and epidemiological features of rheumatic diseases in patients attending the university hospital in Kinshasa

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Abstract The aim of the present retrospective and hospital-based study was to describe epidemiological and clinical features of rheumatic diseases in patients attending the University Hospital of Kinshasa (UHK). Rheumatic complaint was a reason for consultation in 12.1% of outpatients attending the Department of Internal Medicine of the UHK. Osteoarthritis was the most common rheumatic disease (59.2%), followed by soft tissue rheumatism (16.1%), gout (9.3%), and spondylarthropathies (7.5%). The cumulative frequency of autoimmune diseases (rheumatoid arthritis, systemic lupus erythematosus, systemic sclerosis, dermatomyositis, and mixed connective tissues disease) and the frequency of osteoporosis were 5.2 and 2.7%, respectively. Lumbar spine was the part of the skeleton mostly affected by osteoarthritis. Pathological fractures in osteoporosis, subcutaneous nodules, rheumatoid factor, and erosive bone lesions in rheumatoid arthritis were rarely found. Compared to the previous studies performed in the same hospital, our results disclose a threefold increase of rheumatic outpatients. The paucity of erosive arthritis and extra-articular manifestations suggest the less severity of rheumatoid arthritis in our patients. Likewise, the absence of femoral and wrist osteoporotic fractures and the scarcity of advanced vertebral crush fractures suggest the mildness of osteoporosis.

Keywords Autoimmune diseases · Congo · Gout · Osteoarthritis · Osteoporosis · Rheumatoid arthritis

Abbreviations

DM	dermatomyositis
DRC	Democratic Republic of Congo
<i>JIA</i>	<i>juvenile idiopathic arthritis</i>
MCTD	mixed connective tissue disease
OA	osteoarthritis
RA	rheumatoid arthritis
SLE	systemic lupus erythematosus

Introduction

Chronic rheumatic diseases represent an important health problem in developed countries [1].

In sub-Saharan Africa, rheumatic diseases do not enter into the medical priorities of most countries [2–7]. In the Democratic Republic of Congo (DRC), the first description of rheumatic diseases harks back to the 1980s, suggesting that rheumatic diseases were almost absent or were not part of important medical problems [8–10]. Literature from other African countries have shown a regional increase frequency of some rheumatic diseases, such as rheumatoid arthritis (RA) and other autoimmune diseases in southern and eastern Africa during the last decade [11–13]. This suggests the variability of epidemiological and clinical aspects of RA [14]. The interest of the present study was emphasized by the address of the World Health Organization (WHO) and the International League of Associations for Rheumatology (ILAR) who proclaimed the years 2000–2010 the “Bones and joints decade” and invited members to make efforts to publish preliminary results concerning epidemiological and clinical aspects of rheumatic diseases in their respective countries [15].

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Materials and methods

The medical records of all patients attending the Rheumatology clinic at UHK from 1988 to 2002 were reviewed. Complete epidemiological data from all units of the internal medicine department were obtained for only the period between 1998 and 2002 and were used for relative frequency calculations.

UHK is the reference hospital in DRC considering the number of qualified health professionals. UHK is opened to a population of about 2 million in the surroundings, and more than 100,000 people from this population attend the UHK outpatients units per year and 10,000 people attend the internal medicine department per year.

The following criteria were used in the present study:

- For osteoarthritis (OA): joint pain, subchondral osteosclerosis and/or osteophytosis on X-ray and normal erythrocyte sedimentation rate (ESR) (determined by Westergren method).
- For osteoporosis: the presence of pathological fractures (femoral neck, wrist) or backache associated to vertebral crush fractures or biconcave vertebrae on X-ray. Graduation of vertebral osteoporosis was of Renier [16].
- For rheumatoid arthritis: chronic symmetric arthritis of small (hands and feet) and large joints.
- For autoimmune diseases: systemic lupus erythematosus (SLE) was diagnosed in the presence of skin lesions such as malar rash, discoid rash, skin hyperpigmentation areas, polyarthritis, antinuclear factor (by indirect immunofluorescence), LE cells, and/or anti-DNA. Systemic sclerosis (SSc) was diagnosed in the presence of widespread skin thickening and histologically confirmed sclerosis. Dermatomyositis (DM) was diagnosed in the presence of myositis, dermatitis with histopathological confirmation. Mixed connective tissue disease (MCTD) was diagnosed in the presence of associated manifestations of SLE, SSc, and DM and the presence of extractable nuclear antigen (ENA).
- For spondylarthropathies: inflammatory chronic lumbar pain and/or an asymmetric peripheral arthritis, accelerated ESR, and X-ray images of sacroiliitis and/or enthesopathy. Reactive arthritis (ReA) was considered when arthritis occurred after an urogenital or gastrointestinal infection. Ankylosing spondylitis (AS) was considered in the presence of lumbar pain, spine stiffness, and syndesmophytes on X-ray. Undifferentiated spondyloarthropathies (Usp) are those not fulfilling criteria of AS, of psoriatic arthritis, ReA, and Reiter's syndrome.
- For rheumatic fever: Jones' criteria [17] were used.
- For gout: Ryckewaert's criteria [18] were used.

- For rotator cuff dysfunction: shoulder pain and/or subacromial calcification of supraspinatus tendon or greater tubercle sclerosis on X-ray.
- For the Carpal tunnel syndrome: paresthesia in the fingers (except the finger V), and for the tarsal tunnel syndrome: paresthesia in the toes (except in diabetes mellitus). From the 10,813 records examined, only 2,370 fulfilled the above-mentioned criteria.

Results

The relative frequencies of rheumatic patients attending the Department of Internal Medicine increased from 1988 to 2002. Indeed, in 1988, the total number of outpatients in the Department of Internal Medicine was 4,075 and 263 had rheumatic complaints (6.5%); in 1992, from a total number of 2,208 outpatients, 175 were rheumatic patients (7.9%); and in 1996, from a total number of 1,608 outpatients, 210 were rheumatic patients (13.1%); in 2000, from a total number of 2,688 outpatients, 323 were rheumatic patients (12%). For the period 1998–2002 (during which all data were available), the average relative frequency was 12.1%.

Among 2,370 rheumatic patients concerned by this study, 1,061 (44.8%) were males and 1,309 (55.3%) were females. The male/female sex ratio was 1:1.2. The mean age \pm SD of patients was 49.7 ± 13.1 (ranged between 4 and 98 years).

Table 1 shows some epidemiological characteristics of rheumatic diseases observed in this study. Some patients suffered from more than one rheumatic disease.

Osteoarthritis

Figure 1 shows case distribution of OA according to age and sex. OA was the most frequent disease in the present study.

Joint pain was found in all patients. Swelling and stiffness of the joints were found in 11.8 and 9.8% of patients, respectively. Joint crepitus was observed in only 4.4% patients.

Radiological abnormalities in OA patients were osteophytes in 93.2%, subchondral sclerosis and vertebral plate sclerosis in 73.5%, loss of intervertebral disc and joint narrowing in 20.7%, and bone cyst in 0.7%.

The spine was affected in 1,057 patients (75.4%). The lumbar spine was the main localization of OA, occurring in almost two thirds of spinal OA. Other sites were the knee in 476 patients (34%) and the hip in 62 patients (4.4%). OA was rarely seen in other joints like ankles (13 patients), sacroiliac joints (11 patients), scapulohumeral joint (3

Table 1 Some characteristics of rheumatic diseases

Diseases	N (Rf)	Sex distribution			Mean age (years)±SD
		M	W	Ratio	
OA	1,402 (59.2%)	587	815	1:1.4	52.8±11
STR	381 (16.1%)	176	205	1:1.2	51.4±11.7
Gout	221 (9.3%)	212	9	22.4	49.7±11.1
Spondylarthropathies	188 (7.6%)	58	130	1:2.2	39.7±11.7
RA	82 (3.5%)	22	60	1:2.7	45.3±15.3
Osteoporosis	63 (2.7%)	14	49	1:3.5	63.1±12.6
Other ReA	55 (2.2%)	35	20	1.8	36.1±18.4
SLE	23 (0.9%)	2	21	1:11	31.8±11.9
Septic arthritis	15 (0.6%)	10	5	2	41.6±13.2
ScS	13 (0.6%)	1	12	1:12	30.3±11.2
JIA	11 (0.5%)	4	7	1:1.8	10.9±3.5
MCTD	2 (0.1%)		2		46
Dermatomyositis	1 (0.05%)	1			20
Miscellaneous	48 (2%)	24	24	1	

N Total number of rheumatic patients, *M* men, *W* women, *Rf* relative frequency to total number of rheumatic diseases, *RA* rheumatoid arthritis, *SLE* systemic lupus erythematosus, *MCTD* mixed connective tissue disease, *JIA* juvenile idiopathic arthritis, *ReA* reactive arthritis, *STR* soft tissue rheumatism, *SSc* systemic sclerosis

patients), carpo-metacarpal joint of the thumb (3 patients), elbow (3 patients), wrist (1 patient), and acromioclavicular joint (1 patient).

Other skeletal abnormalities associated with OA were lumbar scoliosis (44 patients), dorsal scoliosis (6patients), genu varum (1 patient), genu valgum (22 patients), and hyperlordosis (38 patients).

Osteoporosis

Figure 2 shows age and sex distribution of osteoporosis patients. Of these patients, 84.1% were over 50 years and 60.3% were over 60 years of age.

X-ray shows biconcave vertebrae (stage 2 of Renier) in 54 patients and other vertebral crush fractures (stages 3 to 5 of Renier) in 9 patients. Femoral neck and wrist fractures were not observed in this study.

Arthritis

Arthritis (except gout arthritis) concerned 393 patients (16.6%) in this study: 138 males and 255 females. The male/female sex ratio was 1:1.8.

One hundred twenty one patients were affected by autoimmune diseases.

Table 2 shows autoimmune diseases observed in this study.

RA was the most frequent autoimmune disease in this study. Figure 3 shows age and sex distribution of RA patients. The mean duration of the disease was 6 years (ranged between 3 months and 26 years).

Symmetric involvement of small joints of hands was observed in all cases. Large joints were affected only in 70 patients (85.4%); the duration of the morning stiffness was given only in 4 patients (4.9%). Extra-articular manifestations such as subcutaneous nodules (one patient) or sicca syndrome (three patients) were scarcely found. Joint deformities were observed in eight patients (9.8% of RA patients): ulnar deviation in five patients, Z thumb, Swan neck deformity, Boutonniere deformity, knee dislocation, and genu valgum in one patient, respectively.

X-ray was performed only in 39 patients. Abnormalities mostly found were peri-articular osteoporosis (57.7%) and joint narrowing (23.7%). No joint erosions were observed. The search of rheumatoid factor (by the agglutination latex test) was performed in 24 patients, and 15 of them were positive; only one of these 15 patients presented severe joint deformities. ESR was found to be higher in all patients.

SLE was observed in 23 patients. Seventeen (73.1%) had musculo-skeletal pain: arthritis in 14 patients, arthralgia in

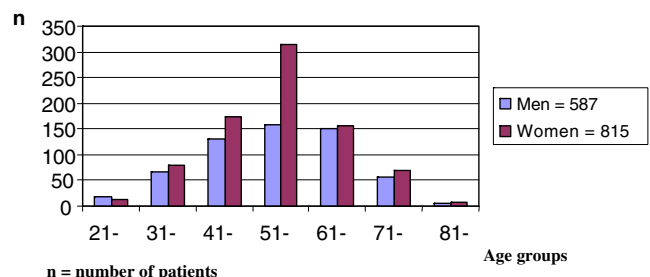


Fig. 1 Osteoarthritis distribution according to age and sex

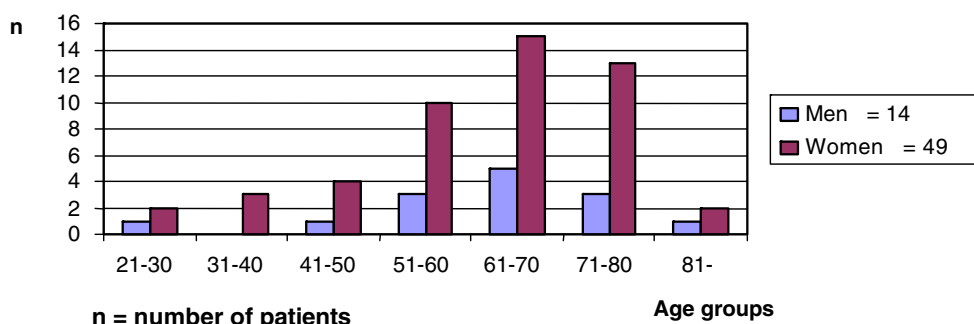


Fig. 2 Osteoporosis distribution according to age and sex

3 patients, and myalgia in 9 patients. Skin lesions were observed in eight patients: malar rash (two patients), skin hyperpigmentation area (one patient), discoid rash (one patient), urticaria (two patients), micronodular lesions (one patient), vitiligo (one patient). Anti-nuclear factor was found in 19 patients (82.6%), LE cells in 17 patients (73.1%), anti DNA antibodies in 2 patients (8.7%), and anticardiolipin antibodies in one patient.

SSc was present in 13 patients with diffuse skin thickening and histological confirmation. Others signs were arthralgia (13 patients), telangiectasia (8 patients), sclerodactily (4 patients), Raynaud phenomenon (2 patients), and myalgia (2 patients). Spirometric restrictive defect was seen in three patients.

DM was found in one patient with myalgia, arthritis, increased muscular enzymes (SGOT, CPK), and myositis at histopathology.

MCTD was observed in two women presenting fever, arthritis, myalgia, vitiligo, and oral ulcerations. ENA were present in both patients.

Eleven patients had JIA. They presented polyarthritis of small and large joints. Four patients (36.4%) had micrognathia (1 patient), Z deformity of thumb (1 patient), Mallet deformity of finger (1 patient), and wrist double synovial tumefaction (1 patient). Only one case of uveitis with blindness was observed.

Spondylarthropathies were distributed as follows:

- AS: in three male patients presenting vertebral stiffness and radiological bamboo spine. Among them two brothers.
- Psoriatic arthritis: in four patients (two males and two females) disclosing psoriatic skin lesions.
- ReA: in 13 patients (9 males and 4 females). The sex ratio was 2:1. Among them, nine may be considered as presenting Reiter's syndrom, as articular, ocular, and urogenital manifestations were present. Four patients had enteropathic manifestations.
- Undifferentiated spondylarthropathies (Usp) were seen in 168 patients (89.4% of all spondyloarthropathies): 44 males and 124 females. The male/female sex ratio was 1:2.8.

Other reactive arthritis

HIV ReA was seen in 43 patients (1.8%): 31 males and 12 females, with a male/female sex ratio of 2.6. The mean age± S.D was 37±19 years (ranged between 12 and 57 years). Symptoms were either asymmetric polyarthritis in 29 patients (67.4% of HIV patients) or symmetric polyarthritis in 14 patients (32.5% of HIV patients). Nine patients

Table 2 Some characteristics of autoimmune diseases

Autoimmune diseases	N			Rf1 (%), n=121	Rf2 (%), n=2370
	M	W	T		
Rheumatoid arthritis	22	60	82	67.8	3.5
SLE	2	21	23	19.0	1.0
Systemic sclerosis	1	12	13	10.7	0.6
Dermatomyositis	1		1	0.8	0.0
MCTD		2	2	1.7	0.1
Total	26	95	121	100	5.2

M Men, W women, T total, Rf1 relative frequency to all autoimmune diseases, Rf2 relative frequency to all rheumatic diseases, N number of patients

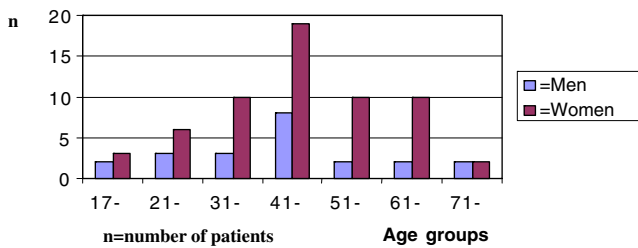


Fig. 3 Rheumatoid arthritis distribution according to age and sex

(20.9%) presented AIDS manifestations (fourth stage of WHO). Anti-HIV antibodies [by enzyme-linked immunosorbent assay (ELISA)] were present in all patients.

Rheumatic fever was found in four patients. Their mean age was 19 years, ranged between 17 and 20 years.

Arthritis associated with erythema nodosum was present in eight patients (two males and six females) with skin maculo papular erythematous lesions in whom Mantoux reaction was strongly positive. Peripheral arthritis (ankle, knee, and wrist) was present.

Septic arthritis was seen in 15 patients: 11 cases of Pott's disease (lumbar in 6 patients, dorsal in 2 patients, and dorsolumbar junction in 3 patients), 3 cases of hip tuberculosis, and 1 case of septic gonarthrititis (non identified Gram⁺ bacteria).

Monoarticular form of gout was found in 81 patients (36.8%), oligoarticular form in 86 patients (38.9%), and polyarticular in 54 patients (24.4%). Tophi were present in 17 patients (7.7%). Eighty-five patients (38.5%) had a known history of gout. Joint pain was associated to hyperuricemia in all cases and X-ray "pied hérissé" (tarsal joint osteophytosis) was observed in three cases.

Soft tissue rheumatism (STR) constitute the second largest group in this study after OA. Rotator cuff dysfunction was the most common of them. It was found in 268 patients (70.3% of STR and 11.3% of all rheumatic patients). X-ray was obtained only in 77 patients and showed subacromial calcification in 30 patients (39%), greater tubercle sclerosis in 29 patients (37.7%), and was normal in 18 patients (27.4%). Others STR were carpal tunnel syndrome in 46 patients (12.6%), hip peri-arthritis in 18 patients (5%), enthesitis (iliac crest, calcaneum, ischio-pubic, suspatellar) in 14 patients (3.9%), and tarsal tunnel syndrome in 7 patients (2%). Other tendonitis (De Quervain's tenosynovitis, quadricipital tendonitis, and Achilles tendonitis) were seen in 25 patients (6.6%).

Discussion

This is a clinical retrospective study. Subsequently, there could be a selection bias because it concerns only patients attending the UHK. It may be that relative frequencies

calculated do not reflect the disease prevalence in the population. For example, patients with low back pain will go to a rheumatologist only when they have serious problems. Furthermore, some immunological and imagery investigations are very expensive for many of our patients or are not available in our hospital (e.g., Dexa, rheumatoid factor, anticardiolipin antibody, HLA test, etc.), and could not be taken into account in the diagnosis of some diseases such as RA. Anti-DNA antibody, ENA, and anticardiolipin antibody observed in this study were obtained in patients who came from South Africa or Europe. In comparison with results found 20 years ago in the same hospital [4, 8–10], the increase in the relative frequencies of rheumatic patients and rheumatic diseases were observed. This can be explained by an improved organization of the Rheumatology Unit. For example, patients are carefully examined and better informed and educated by two rheumatologists.

OA is the most frequent rheumatic disease in the present study. This confirms observations of previous studies in DRC [4] and in the literature [19–22]. Given that rheumatic diseases concern 12.1% of all outpatients attending internal medicine in this study, the calculated relative frequency of OA is 7.2%. Thirteen percent of OA patients were under 30 years. Although there is no "cause à effet" relationship clearly mentioned in record charts, traumatism and other musculoskeletal disorders (e.g., scoliosis, genu varum, and genu valgum) may be taken into account to explain the occurrence of OA in young patients.

Vertebral column was the most affected area by OA (75.4% of all patients), and lumbar spine was the most affected anatomical region (51% of all patients). This is in agreement with the previous finding in the same population [4]. It is known that X-ray evidence of OA in the spine is common over 50 years of age, and it is not necessarily responsible for spinal pain. Therefore, the relative frequency of spinal OA given in this retrospective study may be overestimated, as spinal pain may be due to other causes such as spondylarthropathies and osteoporosis. Knees were the second area of OA in our study. The localization of OA depends on several factors such as genetic factors, musculoskeletal disorders, wearing and tearing of a given joint...The predominance of spinal localization in the present study may be due to the bending of vertebral column during farming, as most of our patients are farmers. In two recent studies, Ecchari and Forriol [23, 24] reported the higher frequency of radiologically confirmed OA lesions in carriers of heavy weight on the head. Knee joint contributes in supporting the body weight, and it participates in walking, playing, and praying. This may also explain the high frequency of the knee OA in our population, which were used to long distances walking. The hip joint was seldom involved in the present study, compared to the frequency observed in whites [3, 21, 22].

This difference may be explained by the position during sitting. Indeed, in Great Britain and in Europe in general, the usual position when sitting is with legs in adduction [25]. In sub-Saharan Africa, however, the usual position is with legs in abduction. Moreover, children are carried on the back by their mothers with legs in abduction [26]. The endorotation position of coxofemoral joint seems to be a protective attitude against coxarthrosis. This is in agreement with Asians' studies, which showed that squatting protect against coxarthrosis [27, 28]. The low prevalence of congenital hip abnormalities and dysplasia reported in Africans [26, 29, 30] may also participate in the scarcity of coxarthrosis. However, Heberden's nodules were not seen in this study, and this is in agreement with previous observations reported elsewhere in Africa [30].

Osteoporosis was rarely seen among the rheumatic patients. Its scarcity is in agreement with other reports from the same population [4] and from Africa in general [31, 32]. In a previous study, Tozin et al. [33, 34] estimated that the prevalence of osteoporotic fracture of femoral neck and wrist were 0.84 and 0.06 per 100,000 inhabitants, respectively. These observations suggested that osteoporotic fractures are rare in Congolese people when compared to whites [35, 36]. However, in the present study, radiogrammetric measurement of osteoporosis may present bias given that more than 30% of bone must be lost before X-ray visualization. As stated by Tozin et al. [33, 34], the less severity of osteoporosis and the scarcity of hip and wrist fractures in the Congolese population may be explained by a relatively high bone mass, a lower bone turn-over attested by low urine calcium, insulin growth factor, osteocalcin and parathormon, and an important benefit obtained from exposure to sun.

RA was uncommon. This is in agreement with the results of the previous study [4] in the same population. It was not possible in this study to use ACR criteria. For example, rheumatoid factor and X-ray are very expensive for many patients; the duration of morning stiffness and the disability of these patients were mentioned in most of the records. Joint deformities were rare comparatively to the European and American figures where they are common and may require surgical reparations [37, 38]. RA seems to be less severe in this study, as neither extra-articular manifestations nor erosive arthritis was found [39–41]. However, this situation is changing in some regions of eastern and southern parts of Africa where the disease score of severity is increasing [13, 39–43], while in central and western Africa the severity score remains relatively low [39, 40].

If RA is really less severe in African populations, this may be due to specific protective factors, such as the multiple antigenic stimulations attested by hypergammaglobulinemia [44] and hypercomplementemia [45]. Moreover, less severity has been such that patients do not

consult. Genetic arguments such as the scarcity of HLA DR4 in our population may also explain the rarity of RA [46, 47]. Indeed, Greenwood et al. [48] observed that mice infested by *Plasmodium falciparum* were protected against autoimmune diseases. Likewise, Moolenburgh [49] showed that the populations living in higher altitude where malaria is rare presented a more severe form of RA than those living in lower altitude where malaria is endemic.

SLE was uncommon in this study. This is in agreement with a previous study in the same population [8] and the literature [50–52]. The scarcity of SLE among Congolese rheumatic patients (while it is an important health problem in African Americans) may be explained in part by genetic arguments. Indeed, Mbayo [46] reported the low frequency of HLA DR3 and HLA A1B8DR3 haplotype in Congolese population. Although in the Department of Internal Medicine, patients with renal complication are directed to the Nephrology Unit, patients in the Rheumatology Unit did not disclose a severe evolution.

Others autoimmune diseases (ScS, DM) were also uncommon in this study probably for the same reasons as mentioned above.

Spondylarthropathies were common in this study; however, in the past [4, 8], this group was not identified in the same population. This can be explained by a better identification of this group of diseases since two decades. AS, which is one of this group, is very rare. This scarcity seems to be related to the low presence of HLA B27 gene in this population [53, 54].

Given the high frequency of infectious diseases in tropical area, a high frequency of reactive arthritis in our population could be expected. This is not the case. Is reactive arthritis of a mild clinical feature? Is there environmental or genetic factor that play a protective role?

Septic arthritis (including tuberculosis arthritis) appear to be rare in this study because most of these patients attended Orthopedics Unit as reported by Pholo [55] who observed 170 cases of septic arthritis among patients attending Orthopedics Unit from 1997 to 2003. The same may be said for HIV-related arthritis because AIDS patients are managed by the Infectiology Unit.

Compared to the total number of patients admitted in the Department of Internal Medicine, the relative frequency of gout was 1.07% (tenfold that observed by Ditu et al. [10] 20 years ago). This increase may be due to environmental factors such as increase in fat and alcohol consumption. As the visualization of urate crystals in synovial fluid was not possible because of the lack of appropriate microscopy, it is possible that the relative frequency observed in this study was overestimated.

STR becomes more frequent in patients attending the Rheumatology Unit, surely because clinicians are more aware to these pathologies. STR may also accompany most

of ReA and spondylarthropathies. Therefore, it could be expected that the diagnosis of STR will be made more frequently.

Conclusion

Rheumatic diseases become more common in outpatients attending the Department of Internal Medicine of the UHK. A prospective clinical and immunogenetic study is necessary to elucidate the reason for the scarcity and less severity of some of them, e.g., RA, osteoporosis, reactive arthritis....

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