

Effect of Age on Rheumatoid Arthritis in a Black Senegalese Population

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Abstract

Objective: It was to compare the epidemiological, clinical and immunobiological aspects of a Senegalese RA population over 60 years, with a young RA population.

Patients and Methods: This prospective study took place between June 1, 2007, and May 31, 2010. It covered the records of all RA patients admitted during this period. RA was diagnosed on the basis of ACR criteria.

We conducted a comparative study of all cases. Patients were divided into two groups according to the age of symptom onset: below age 60 and above age 60.

Results: One hundred ninety-two cases were collected from a total of 2134 patients seen in the rheumatology outpatient clinic. Our population included 174 women and 18 men, which identifies a sex ratio of 0.1. The mean age at diagnosis was of 40.5 years.

In 181 patients, the age at symptom onset could be accurately determined. The group of young subjects included 162 patients, whereas 19 patients comprised the group of elderly subjects. The sex ratios in the two groups were respectively 0.08 and 0.33. The average DAS 28 score was significantly lower in the elderly group. Ulnar deviation was significantly more common in younger patients, unlike other deformations which were more common in the elderly.

Conclusion: The elderly subjects' RA represents 10.5% of the RA population with a sex ratio of 0.33 against 0.08 for young subjects. Joint deformations are more important on younger subjects, but with a lower activity at diagnosis.

Keywords: Rheumatoid arthritis; Elderly subject; Senegal; Sub-Saharan Africa

Introduction

Rheumatoid arthritis (RA) is the most common form of chronic inflammatory arthritis. It has been described in all populations. In Senegal, it has a severe beginning, undoubtedly due to delayed diagnosis, a polyarticular form, and a strong positivity to immunological markers contrasting with its low systemic character [1].

When RA affects the elderly, it presents features that tend to make it a separate entity [2]. The increasing age among the population explains the renewed interest in inflammatory polyarthritis in the elderly.

The objective of this study was to compare the epidemiological, clinical and immunobiological aspects of a black Senegalese RA population older than 60 with a young RA population.

Patients and methods

This prospective study took place over a period of three years – between June 1, 2007, and May 31, 2010. It covered the records of all RA patients admitted during this period. RA diagnosis was performed on the basis of the ACR 1987 criteria [3].

On each patient, we collected epidemiological data, clinical data (including articular index, synovial index, number of nighttime awakenings, duration of morning stiffness, place and type of deformations, global impact (global VAS) of RA on daily activities rated from 0 to 100 according to severity and extra-articular signs); biological data (blood count, erythrocyte sedimentation rate and C reactive protein); and immunological data (rheumatoid factors, antibodies, antipeptides and citrullines).

Disease activity was assessed by the Disease Activity Score (DAS) 28.

We conducted a comparative study of all cases diagnosed. Patients were divided into two groups according to their age at symptom onset: under 60 (young subjects) and over 60 (elderly subjects).

Quantitative variables are described in terms of mean (1st quartile, 3rd quartile) because of the non-Gaussian character of the distribution. Qualitative variables are described in terms of number (percentage) for each modality of the variable.

For the subgroup analysis, quantitative variables were compared using the nonparametric Wilcoxon-Mann-Whitney test, and categorical variables with the Chi² test when appropriate, or with an exact Fisher test otherwise.

Results

One hundred ninety-two cases were collected during the period of the study from a total of 2134 patients seen in the rheumatology outpatient clinic, representing an RA prevalence of 9% in the outpatient clinic. Our population included 174 women (90.6%) and 18 men (9.4%), for a sex ratio of 0.1. The mean age at diagnosis was 40.5 years. Two peaks, at ages 30 to 40, and 40 to 50, were observed in the age groups (Figure 1).

In 181 patients, age at symptom onset could be accurately determined. Figure 2 shows a boxplot of age at symptom onset.

The group of young subjects included 162 patients, including 19 patients in the elderly patient group. Thus, the elderly accounted for

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Received October 11, 2011; Accepted November 14, 2011; Published November 17, 2011

Citation: Ndongo S, Tiendrebeogo J, Pouye A, Lekpa FK, Ka MM, et al. (2011) Effect of Age on Rheumatoid Arthritis in a Black Senegalese Population. *Rheumatology* 1:106. doi:10.4172/2161-1149.1000106

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10.5% of the RA population. The sex ratio in the two groups was 14 men/162 women and four men/12 women, respectively.

Table 1 summarizes the effect of age at symptom onset on different variables.

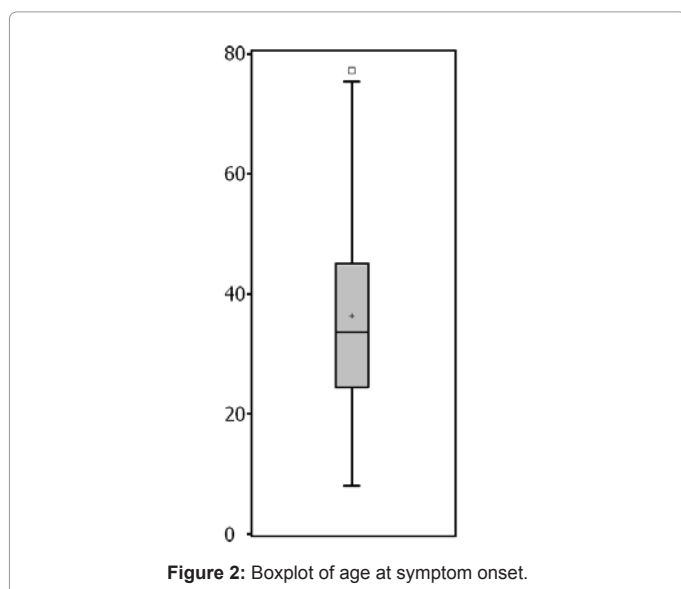
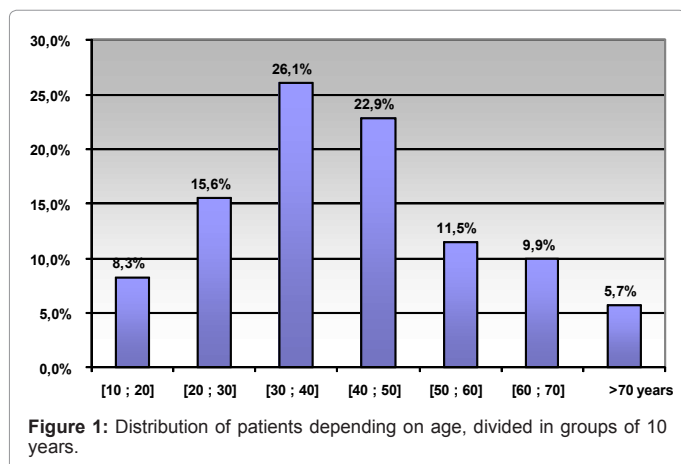
Discussion

RA frequency varies from one region to another worldwide. In Africa, the literature shows a double particularity of epidemiological RA. The prevalence recorded in residents of Maghreb [4], East Africa [5], and Southern Africa [6] is relatively high, comparable to that observed in Caucasians. In West Africa, the prevalence of RA is lower even in the most recent studies. In the Philippines and India, the prevalence of RA is 0.4% and 0.75%, respectively [7].

In our study, we collected 192 cases of RA during three years from a total of 2134 patients, with a prevalence of 9% in our rheumatology outpatient clinic.

The female predominance in our series was significant, with a sex ratio of 0.1. The low sex ratio for RA has been established before. In the West, the percentage of women with RA reached between 74% to 80% [8,9], and similar results were obtained in certain African series [7].

In Africa, the average age of RA is between the 4th and 5th decade,



	Patients age		p-value
	under 60 N=162 (89.5%)	60 or older N=19 (10.5%)	
Living environment			0.03 ⁽¹⁾
Rural or semi-urban	28 (18.2%)	8 (44.4%)	
Urban	126 (81.8%)	10 (55.6%)	
Deformations			
Ulnar deviation	45 (27.8%)	12 (63.2%)	0.02
Swan neck	5 (3.1%)	2 (10.5%)	0.16 ⁽¹⁾
Mallet finer	7 (4.3%)	2 (10.5%)	0.24 ⁽¹⁾
Camelback	10 (6.2%)	2 (10.5%)	0.37 ⁽¹⁾
Piano key	3 (1.9%)	0	/
Limb flossum	20 (12.4%)	6 (31.6%)	0.04 ⁽¹⁾
Z-thumb	24 (14.8%)	6 (31.6%)	0.10 ⁽¹⁾
Finger in buttonhole	50 (30.9%)	5 (26.3%)	0.68
No deformation	78 (48.2%)	3 (15.8%)	0.01
Amount of extra-articular signs			0.43
0	75 (46.3%)	7 (36.8%)	
≥1	87 (53.7%)	12 (63.2%)	
DAS 28	6.7 (5.4 ; 7.5)	5.2 (0.7 ; 6.4)	0.04
Antibodies			
Rheumatoid factors (IU)	32 (12 ; 144)	96 (60 ; 192)	0.30
Anti-CCP (IU)	94 (13 ; 164)	72 (12 ; 233) ⁽²⁾	/

¹Fisher's exact test

²only 4 data

There was a significant difference in the distribution of age of patients at symptom onset in both urban, residential environments and rural/semi-urban (p=0.03)

We also observed a significant effect between the two age groups on the DAS28 (p=0.04), the presence of ulnar deviation (p=0.02), the presence of limb flexion deformity (p=0.04), and the absence of deformity (p=0.01)

Table 1: Effect of age at symptom onset.

unlike what was observed in Western studies, where the average age is older – between the 5th and the 6th decade [8,9]. This difference is likely due to a reflection of the demographics characterized by an aging Western population compared to that of Africa. It is worth noting that the time to diagnosis was shorter in the West due to a better understanding of the disease and more advanced research means. In our series, the average age was of 40.5 years, and the age group from 30 to 40 was the most affected.

RA in the elderly most often affects women, or men as much as women, depending on the series [10,11]. It represents approximately 15% to 20% of all RA cases in the Western series [12,13]. The prevalence of late-onset RA and its mean age is variously assessed, depending on each study. In our series, it represents 10.5% of the RA population, with a sex ratio of 0.33 versus 0.08 in the young subjects.

The differences in the clinical presentation could be explained partly by altered immune responses in the elderly. Indeed, the aging process is associated with a decreased proliferation of T cells [14]. Other studies emphasize that different immunoregulatory mechanisms may be involved in the pathogenesis of RA in different age groups. In their study, Gamerith et al. argue that the ratio of antigens carrying anti-IgG-Fab (hidden aFab) on the free aFab was substantially increased in the group of young subjects compared to the group of elderly subjects [15]. Differences are also noted on experimental arthritis in young and old experimental models. A study on experimental collagen to induce arthritis in a population of young and old Fisher rats showed a decreased of RA incidence and severity in the older animals [16]. In our series, the average DAS 28 score was significantly lower in the elderly. Similarly, 48.2% of subjects under age 60 did not present any deformation, while only 15.8% of subjects older than age 60 did

not, leading to a significant difference between these two populations ($p=0.01$). The ulnar deviation was more significantly observed ($p=0.02$) in the group of young patients, contrarily to the flexum and Z-thumb deformity, which were more prominent in patients aged 60 and older.

Conclusion

RA in the elderly in a Senegalese hospital represents 10.5% of the RA population with a sex ratio of 0.33 versus 0.08 in young subjects. In this regard, joint deformations are more important in younger subjects, but with lower disease activity at the moment of diagnosis.

Key messages

Rheumatoid arthritis (RA) in the elderly in Senegal represents 10.5% of the RA population.

Joint deformations are more frequent in younger subjects, but with lower disease activity.

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