Clinical Significance of Fibromyalgia Syndrome in Rheumatoid Arthritis: Prevalence and Associated Factors in Subsaharan Africa

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Abstract: *Objective*: The aim of this work was to study the prevalence and factors associated with fibromyalgia in African Black rheumatoid arthritis patients in the south of the Sahara.

Method: It was a cross-sectional case-control study conducted from January 2017 to June 2017. Seventy-five rheumatoid arthritis patients (case) and 150 healthy subjects without rheumatoid arthritis (controls) were consecutively recruited during the rheumatology consultation period were include.

Result: The mean duration of rheumatoid arthritis was 3.75 years ± 3.60. The mean Disease Activity Score (DAS)28 was 5.68 ± 0.91. Forty-eight rheumatoid arthritis patients (64.0%) and 20 controls (13.3%) respectively had fibromyalgia. The difference was statistically significant (p <0.0001). Among the risk factors for fibromyalgia that were studied, only the absence of rheumatoid factors was associated with the presence of fibromyalgia.

Conclusion: The prevalence of fibromyalgia was significantly higher during rheumatoid arthritis than in a healthy control.

Keywords: Fibromyalgia, rheumatoid arthritis, black, Africa.

INTRODUCTION

Fibromyalgia (FM) is a syndrome characterized by generalized chronic pain and the presence of specific tendon pain points. It has a significant impact on patients' health status, functional capacity and quality of life [1]. Its prevalence varies from 2.2% to 4.7% in European series [2,3]. Few studies have been done in Africa; a study in Tunisia that included 1000 subjects found a prevalence of 8.27% [4]. The association rheumatoid arthritis (RA) and fibromyalgia is more and more reported in the literature [5]. Presence of FM may have major implications in the interpretation of the Disease Activity Score (DAS) 28 [6]. The prevalence and phenotype of FM during RA varies according to the diagnostic criteria used for its diagnosis [7]. The studies reported in Africa about this association come mainly from the North of the continent [8,9]. The aim of this work was to study the prevalence and factors associated with FM in African Black RA patients in the south of the Sahara.

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PATIENTS AND METHOD

Patients

It was a cross-sectional case-control study conducted from January 2017 to June 2017. Seventy-five RA patients were consecutively recruited during the rheumatology consultation period. All RA patients met the American College of Rheumatology (ACR) / European League Against Rheumatim (EULAR) 2010 criteria [10]. RA patients (case) were matched by age and gender to 150 healthy subjects without RA (controls). Patients and controls were all black Africans. These controls were recruited from accompanying patients and medical staff.

Clinical and Laboraty Evaluations

Sociodemographic data of patients were studied in cases and controls: age, sex, marital status and educational level. Information concerning RA was: duration of the disease, morning stiffness, number of painful joints (NPJ), number of swollen joints (NSJ), evaluation of the patient's condition by itself and by the physician on a visual analogue scale (VAS), erythrocyte sedimentation rate (ESR) and / or C reactiv protein (CRP); The assessment of RA activity was

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made by DAS 28. The RA was in remission if DAS 28 < 2.6, low activity if DAS 28 was between 2.6 and 3.2 and active if DAS 28 ≥ 3.2. The presence of joint deformities, dry ocular or oral syndrome was sought. The search for anti citrullinated peptid antibodie (ACPA) and X-rays of the hands and feet were performed in all patients. The diagnosis of an FM was made by the questionnaire FiRST (Fibromyalgia Rapid Screening Tool). It includes 06 items: Diffuse pain, painful symptoms, fatigue, sleep and cognitive disorders, abnormal non-painful sensations, functional somatic symptoms [11,12]. The FiRST questionnaire was administered to RA patients and controls.

Ethical and Deontological Considerations

During the study, we respected the confidentiality of the information given to us as well as the anonymity of the people surveyed. The patients were included in our study after their informed consent.

Statistical Analysis

The data collected was coded. The data entry and analysis were done on a microcomputer equipped with software Word 2016 and EPI INFO version 7.0.9.7 The graphics and tables were done on EXCEL 2016 under WINDOWS 10.

An analytical study compared qualitative variables using the Pearson Khi 2 test with a 95% confidence interval. For the comparison of means, the Student's test was used. The probability P is significant if p<0,05. The evaluation of an odds ratio (OR) has made to highlight the associated risks and to assess their importance. This is indicated for a 95% confidence interval. The variable is considered a risk factor if OR>1. When the confidence interval (CI) contains the value 1, the link between the variables is not statistically significant.

RESULTS

The mean duration of RA was 3.75 years ± 3.60 with extremes of 0.33 years and 20 years and a median of 3 years. The mean DAS28 was 5.68 ± 0.91 with extremes of 2.48 and 7.34. Only one patient (1.33%) was in remission. The mean ESR was 35.27 ± 26.62 mm with extremes of 2 and 112 mm at H1 and a median of 24 mm at H1. The mean value of CRP was 13.05 ± 23.62 mg / L with extremes of 0.10 mg / L and 135.4 mg / L and a median of 4.54 mg / L. Forty-eight RA patients (64.0%) and 20 controls (13.3%) respectively had FM. The difference was statistically significant (p <0.0001). Table **1** show Demographic and clinical characteristics of RA patients with and without fibromyalgia (FM).

Table 1: Demographic and Clinical Characteristics of Rheumatoid Arthritis (RA) Patients with and without Fibromyalgia

	Rheumatoid arthritis (n=75)		OR [IC 95%]	*p**
	With FM (n=48)	Without FM (n=27)		
Age <50 years	26 (59,1)	18 (40,9)	0,59 [0,22-1,57]	0,2913
Male	12 (66,7)	6 (33,3)	1,16 [0,38-3,57]	0,7868
Level of study				
Superior	3 (60,0)	2 (40,0)	0,6 [0,09-4,54]	0,621
Secondary	12 (54,5)	10 (45,5)	0,48 [0,13-1,70]	0,256
Primary	18 (69,2)	8 (30,8)	0,9 [0,25-3,17]	0,87
Marital status				
Married	40 (65,6)	21 (34,4)	1,90 [0,43-8,39]	0,3945
Widower / Widow / separate	4 (80,0)	1 (20,0)	3,98 [0,29-53,18]	0,2955
Early rustling	32 (64)	18 (36)	1 [0,36-2,71]	1
ACPA	40 (61,5)	25 (38,5)	0,4 [0,07-2,03]	0,3136
Rheumatoid factors Negative	22 (84,6)	4 (15,4)	4,5	0,01
Positive	27 (55,1)	22(44,1)	1	-
Deformations	22 (73,3)	8 (26,7)	2,00 [0,67-4,74]	0,2414
Dry ocular Syndrome	9 (81,8)	2 (18,2)	2,88 [0,57-14,46]	0,3086
dry mouth syndrome	13 (72,2)	5 (27,8)	1,63 [0,51-5,21]	0,4044
corticoid	42 (62,7)	25 (37,3)	0,56 [0,10-2,99]	0,7031

*p= probability.

Table 2: Some Studies about PR-FM Association in the World

Authors	Country	Year of publication	Effective of RA	Diagnostic criteria of FM	Prevalence of FM
Ranzolin and *et al*. [6]	Brazil	2009	270	ACR 1990	13,4
Perrot *et al.* [7]	France	2017	172	FiRST	22,6
Fazaa *et al*. [9]	Tunisia	2016	30	FiRST	33,3
Dhir *et al*. [13]	India	2008	100	ACR 1990	15
Fan *et al.* [14]	France	2017	325	ACR 1990	4,9
Gist *et al.* [15]	Australia	2017	117	ACR 1990	33,3
Gist *et al.* [15]	Australia	2017	117	ACR 2011	41,9
Kim *et al.* [16]	Korea	2017	156	-	16,7
Our serie	Burkina Faso	2019	75	FiRST	64

DISCUSSION

Sixty-four percent of the RA patients in our series had fibromyalgia versus 13.3% in controls with a statistically significant difference. The absence of rheumatoid factors was statistically associated with the presence of FM. Any interpretation of our results must, however, take into account the limitations of our study including the weakness of our sample. The prevalence of FM associated with RA ranges from 4.9% to 41.9% [6,7,9,13-16]. We reported a higher prevalence of 64% using FiRST. Table **2** shows some series reported in recent years. Fazaa *et al*. found a prevalence of 33.3% in Tunisia using FiRST [9]. The high prevalence in our series could be a specificity of black african RA. Among the risk factors for FM that were studied, only the absence of rheumatoid factors was associated with the presence of fibromyalgia. However, further studies are needed to confirm this impression. The association of gender as a risk factor for FM seems controversial during RA [6,9]. Indeed, FM was distributed in almost similar proportions in both male (66.7%) and female (63.2%) RA patients in our series. FAZAA *et al*. reported that there was no association between gender and the occurrence of FM during RA while Ranzolin *et al.* found a clear predominance of women in the RA group with FM [6,9]. These differences observed from one series to another may be related to the differences in diagnostic tools used but also to the phenotypic complexity of fibromyalgia [7]. DAS28 score has been largely studied according RA and FM [6,17,18]. In our series, the mean DAS 28 score was 5.70 for FM and 5.63 for non-FM with a non-significant difference. Several authors, however, had contrary conclusions. Thus, Ranzolin *et al*. reported that the presence of FM influenced the values of DAS 28 [6]. In their series, DAS 28 was higher in patients with RA-FM (5.36 ± 0.99) than in patients with RA without FM (4.03 ± 1.39) ($p < 0.001$) [6]. This association has also been reported by other authors [8,9,17,18]. The results of these different studies are difficult to interpret with regard to the reciprocal influence of DAS28 and fibromyalgia [6]. Perception of pain and mood alteration may increase the value of DAS 28 in FM. In these cases, DAS 28 would be inappropriate to express the activity of the disease. We have recently reported a prevalence of 54 % depression during RA [19]. Depression and fibromyalgia are important predictors of increased DAS28 [20]. A decrease in the level of pain in these circumstances would result in an increase in DAS 28 during RA [21]. This mechanism corresponds to that of the FM and could explain the high DAS 28 scores in our study. Also, in front of any active RA patient, the search for an FM should be systematic, supported before a modification of DMARDs. Indeed, in some cases of active RA, there has been a weak presence of synovitis on the ultrasound signifying an objective absence of inflammatory disease [22].

CONCLUSION

The prevalence of FM was significantly higher during RA than in a healthy control. This could have therapeutic implications (antidepressive drugs, psychotherapy…). Further studies with larger series are needed to confirm this PR-FM association and to clarify the risk factors before any conclusion of the interaction between these two diseases in the black african subject.

ETHICAL APPROVAL

This work has been approved by the institutional ethics committee.

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