Research article

Pattern of rheumatoid arthritis in Nigeria; Study of patients from a Teaching Hospital

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Abstract

Introduction: Rheumatoid Arthritis (RA) is an autoimmune inflammatory polyarthritis with numerous extra-articular manifestations. It is said to be rare among black Africans, however there has been a report from a private clinic in Nigeria. We hereby present the clinical and laboratory patterns of presentation of rheumatoid arthritis in a tertiary hospital in Nigeria.

Methods: This was a four year retrospective study of patients that presented to the Rheumatology unit of Lagos State University Teaching Hospital (LASUTH). The diagnosis was based on either the American College of Rheumatology (ACR) criteria or the ACR/ European League of Associations Against Rheumatism (EULAR) 2010 classification criteria for RA.

Results: A total of one thousand two hundred and fifteen patients with rheumatological disorders were seen at the rheumatology unit of LASUTH during the four year period. Of these, 128 (10.6%) patients fulfilled classification criteria for RA. Female to male ratio was 6.1:1. Mean age of the patients was 41.4 years.The proximal interphalangeal joint was mostly affected. ESR and CRP were mostly elevated. Test for Rheumatoid Factor (RF) was positive in 78 (72.2%). Anti-CCP was positive in 54 (61.1%). Radiographs of the hands predominantly showed erosions and periarticular osteopenia. Treatment was with Disease – Modifying Anti-Rheumatic Drugs (DMARDs) and prednisolone.

Conclusion: Rheumatoid arthritis could be a significant medical condition among Nigerians. Nigerians who suffer RA have predominantly high titres of RF and anti-CCP. ESR and to a less extent CRP are usually elevated.

Key words: Rheumatoid arthritis, Clinical and laboratory parameters, Treatment, Nigerians

Introduction

Rheumatoid Arthritis (RA) is a systemic autoimmune inflammatory polyarthritis with articular and extra-articular manifestations[1]. It is regarded as the most common inflammatory arthritis and has a prevalence of 0.5 – 1% in industrialized nations[2,3]. Its prevalence in Africa is estimated at 0.2 – 0.3%[4]. RA has a female to male preponderance of about 3:1. It is usually associated with increased morbidity, mortality and cardiovascular events[5–7]. Hitherto, RA has been regarded as a rare disease among black Africans[8,9].

A report from a private rheumatology clinic in Lagos, Nigeria however showed that RA accounted for 12.3% of patients seen over an eight year period[1]. Report from Democratic Republic of Congo showed that 8.5% of patients that attended a rheumatology clinic over a three year period had RA[10]. RA manifests clinically with joint pain and swelling, significant joint stiffness, constitutional symptoms and impaired quality of life. It is associated with numerous extra – articular manifestations including anaemia, subcutaneous nodules and sicca symptoms[4]. Commercially available serologic markers of the disease include tests for rheumatoid factor and anti – Cyclic Citrullinated Peptide (anti-CCP). The diagnosis of RA is currently based on the 2010 ACR/EULAR classification criteria which requires the presence of synovitis (joint swelling) and a score of at least 6 in four domains; joint affectation, symptom duration, acute phase reactant and serology for rheumatoid factor and/ or anti-CCP)[11]. The American College of Rheumatology 1987 criteria had also been used to make a diagnosis of RA. The treatment of RA is aimed at limiting disease progression, pain relief, improving quality of life and management of co-morbidities. Disease Modifying anti-Rheumatic Drugs (DMARDS) are the mainstay of treatment[4,12]. We hereby present the cases of rheumatoid arthritis seen in a tertiary hospital in Nigeria.

Materials and Methods

This was a four year cross - sectional retrospective study of patients that presented to the Rheumatology unit of Lagos State University Teaching Hospital

(LASUTH), Lagos, Nigeria. Study duration was from July 2011 to June 2015. The diagnosis of RA was made using either the American College of Rheumatology criteria[13] during the first year of study and thereafter using the 2010 ACR/EULAR classification criteria for RA[11]. Smoking history of the patients was documented. Abdominal, as well as cardiovascular and respiratory systems examinations were carried out. The first recorded results of haemoglobin concentration, white blood cell and platelet counts, Erythrocyte Sedimentation Rate (ESR) and C-Reactive Protein (CRP) were documented. Results of rheumatoid factor by latex agglutination and anti-CCP by ELISA were also documented. Radiographs of the hands and feet as reported by radiologists were also documented. Disease activity using the Clinical Disease Activity Index (CDAI) was documented. Medications such as DMARDs, glucocorticoid use and Non Steroidal Anti-Inflammatory Drugs (NSAID) were also documented.

Results

A total of one thousand two hundred and fifteen patients were seen at the rheumatology unit of LASUTH during the four year study period. Of these, 128 (10.6%) patients fulfilled either the American College of Rheumatology classification criteria of RA or the ACR/EULAR 2010 classification for RA. One hundred and ten (85.9%) were females while 18 (14.1%) were males with a female:male ratio of 6.1:1. Age of patients was between 23 – 67 years (mean – 41.4 years). Duration of symptoms before presentation ranged from 2 – 300 months (median- 41 months). There was no patient with history of cigarette smoking. Ten (7.8%) patients gave history of alcohol consumption. None of the patients smoked cigarette. Recurrent fever was present in 43(33.6%) of the patients. Polyarticular pattern of presentation was mostly seen (87.5%). The Proximal Interphalangeal Joint (PIP) was most frequently involved followed by the wrist, knee, elbow and the Metacarpo-Phalangeal Joints (MCP) respectively (Table 1a).

Table 1a: The pattern and frequency of joint involvement

Joint affectation	No.	(%)
Proximal interphalangeal	114	89.0
Wrist	98	76.6
Knee	94	73.4
Elbow	84	65.6
Metacarpophalangeal	82	64.1
Shoulder	74	57.8
Ankle	70	54.7
Metatarsophalangeal	28	21.9

Non – haematologic extra – articular features are shown in Table 1b. The results of haematology and radiology investigations are as shown in Tables 2a and 2b respectively. One hundred and eight (84.4%) patients had Erythrocyte Sedimentation Rate (ESR) done while only 62(48.4%) had C-Reactive Protein (CRP) tested. The ESR was raised in 98/108 (90.7%) and CRP was elevated in 32/62 (51.6%) patients.

Table 1b: Frequency of extra-articular features

Feature	No.	(%)
None	99	77.3
Subcutaneous nodule	23	18.0
Pulmonary	1	0.8
Uveitis	4	3.1
Sicca	1	0.8

Table 2a: Haematologic investigations

Investigation		No.	(%)
Haemoglobin conc. (g/dl) (N=97)	≤10.0	30	30.9
	>10.0	67	69.1
Leucocyte count (per litre) (N=97)	<4	5	5.2
	4-11	81	83.5
	>11	11	11.3
Platelet count (per litre) (N=94)	<150	4	4.2
	150-450	78	83.0
	>450	12	12.8

Table 2b: Radiologic features

Finding	Frequency (N=32)	(%)
Normal	10	31.3
Erosions	8	25
Osteopenia	5	15.6
Erosion and osteopenia	2	6.2
Subchondral sclerosis	2	6.2
Joint space narrowing, osteopenia, subchondral sclerosis	3	9.5
Joint deformities, narrowed joint space periarticular osteopenia	2	6.2

Table 3: Serology determination in patients with RA

Serology			No.	(%)
RF (N=108)	Positive		78	72.2
		<3x ULN	12	11.1
		≥3x ULN	66	61.1
		≥10x ULN	24	22.2
	Negative		30	27.8
Anti-CCP (N=88)	Positive		54	61.1
		<3x ULN	4	4.6
		≥3x ULN	50	56.8
		≥100x ULN	26	29.1
	Negative		34	38.6

ULN = Upper Limit of Normal

Table 4: DMARDs prescription in patients with RA

DMARDs	No.	(%)
MTX	28	21.8
HCQ	16	12.5
MTX + HCQ	62	48.4
SSZ + HCQ	2	1.6
MTX+HCQ+SSZ + RTX	2	1.6
MTX+SSZ+HCQ	6	4.7
LEF	6	4.7

Test for Rheumatoid Factor (RF) was done in 108 (84.4%) patients and anti-CCP in 88 (68.8%). RF was positive in 78/108 (72.2%) and anti-CCP was positive in 54/88 (61.1%). Twenty six (29.5%) patients were negative for both RF and anti-CCP and were classified as seronegative RA. Titres of RF and anti – CCP were high in most of the patients (Table 3).

The Clinical Disease Activity Index (CDAI) was obtained in 76 (29.69%) patients at presentation and of these, 8 (10.5%), 19 (25%) and 49 (64.5%) had low, moderate and high disease activities respectively.

Short term Non – Steroidal Anti – Inflammatory Drugs (NSAIDs) were given to most of the patients for immediate pain relief. All patients received low dose oral prednisolone (15mg or less) which was tapered off to the minimum possible dose over six months. In addition to prednisolone, 28 (21.9%) received only methotrexate (MTX), 17 (13.3%) received only hydroxychloroquine (HCQ),67(52.3%) received a combination of MTX and HCQ. Two (1.6%) patients received triple therapy with HCQ, MTX, SSZ and later received the biologic rituximab (RTX) due to poor disease control. Two (1.6%) could not tolerate other DMARDS and were treated with leflunomide as the only Disease Modifying Anti-Rheumatic Drug (DMARD). Overall, MTX was included in the regimen for 102 (79.7%) patients while HCQ was included in 98 (76.6%) patients (Table 4).

Discussion

In this study, 128 RA patients were seen over four years representing 10.6% of all rheumatology patients seen in the clinic. This gives an average of 32 new cases per year. This ratio is similar to findings of 12.3% found in an earlier study by Adelowo *et al*[1]. This supports the notion that RA and probably other systemic autoimmune diseases may not be so rare in black Africans as previously assumed[14]. The proportion of patients seen in the rheumatology clinic with RA is higher than that reported from Zambia (4.7%)[15] and Democratic Republic of Congo (8.5%)[10] but significantly less than those reported from South Africa (52%)[16] and Kenya (37.3%)[17]. The female:male ratio in this study is higher than that previously reported by Adelowo *et al*[1] but similar to that reported by Muia *et al*[18] from Kenya and Mendiratta *et al*[19] from India. Smoking is known to be the strongest environmental risk factor for seropositive RA[20–22]. None of our patients however had history of active cigarette smoking. This finding is similar to the finding by Malemba *et al*[10] where only 2 out of 114 patients with RA smoked cigarretes. It is generally assumed that black Africans smoke less than their Caucasian counterparts.

This study also showed that RA affects mostly women which is similar to findings in other populations[10,18,23]. Most of the patients had high disease activity at presentation which should necessitate aggressive treatment to reduce progressive joint damage, disability, and overall morbidity and mortality. The high disease activity may be due to delay in presentation. Few patients had radiography of the affected joints done. This is due to the prevailing poverty in the region which therefore leads to prioritization of funds for effective healthcare delivery as previously documented[24]. Anaemia is an important extra – articular manifestation of RA contributing to impaired quality of life. The frequency of anaemia among RA patients in this study is similar to that found in Kenya[18] and Congo[10].

Rheumatoid arthritis from this study is mainly seropositive in nature with only 29.5% having seronegative RA. This finding is similar to the finding in Caucasians. It is also similar to finding in South Africa where 85% of RA patients were found to be RF positive[16]. The percentage of patients seropositive for RF is also similar to that found in Libya by Basma *et al*[23]. The patients seropositive for RF was higher than what has been obtained in Nigeria previously by Adelowo *et al*[1]. Also, this finding is higher than what was obtained in Congo where only 48.6% of patients were seropositive (47.2% for anti-CCP, 34.7% for RF)[10]. However, the study had fewer patients with serology results and this might explain the higher seropositive cases in this present study. The percentage of patients positive for anti-CCP is also comparable to studies outside Africa. No previous study exists in Nigeria regarding RA and anti-CCP positivity. Of note is the fact that most of the patients had high titres of RF and anti-CCP and acute phase reactants were mostly elevated. High titres of RF, anti-CCP and raised acute phase reactants, in addition to female sex and high disease activity at presentation, may be poor prognostic indicators that are prevalent among these patients in this resource poor setting[25].

The treatment of RA from this study showed that MTX is the most prescribed agent, both as monotherapy and in combination with other DMARDs. This is in accordance with the EULAR guidelines for RA management[26]. It is similar to what is practiced in other parts of the world[19,21,27]. Reports from South Africa, Kenya and Libya also showed that MTX is the most prescribed DMARD[12,18,23]. However, some patients may not tolerate MTX or other DMARDs or may have them

contraindicated. Pregnant women and those desirable of pregnancy may have MTX withheld as is seen in patients that were treated with HCQ monotherapy. Biologic agents have been shown to improve disease control and outcome even in patients with poor disease control while on a combination of DMARDS. Oyoo *et al*[28] in Kenya demonstrated significant improvements in simplified disease activity index and overall functional status in patients receiving rituximab after their disease was not controlled while on triple therapy. Two of our patients had to be placed on rituximab following uncontrolled disease while on combination therapy. Regrettably, biologic use in the setting of high disease activity and other poor prognostic factors is low due to prohibitive costs especially since most patients pay out of pocket.

Conclusion

Rheumatoid arthritis is a significant medical condition in Nigeria. It affects predominantly females. Nigerians who suffer RA have predominantly high titres of RF and anti-CCP. ESR and to a less extent CRP are usually elevated and disease activity is usually high at presentation. Poor prognostic indicators are usually high among these patients. Treatment is with combination of DMARDs with MTX and HCQ being the most prescribed agents. Unfortunately, only few patients can afford biologic therapy due to its prohibitive cost and the fact that most of our patients pay out of the pocket.

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