Frequency and Determinants of Rheumatoid Arthritis among Females Aged 20-40 Years in OPD of Avicenna Medical College & Hospital Lahore

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Abstract

Introduction:

Rheumatoid arthritis is a long-term autoimmune disorder that primarily affects joints. It is the most common form of polyarticular inflammatory arthritis characterized by persistent synovial inflammation, bony erosions and progressive articular destruction leading to varying degree of physical disability.

Objectives:

- To determine the frequency of Rheumatoid Arthritis among females aged 20-40 years in OPD of Avicenna Medical College & Hospital, Lahore.
- To assess the determinants of Rheumatoid Arthritis among females.

Method:

A descriptive cross sectional study will be done. Data will be collected through close ended questionnaire by using simple random sampling technique from sample size of 100. At confidence level of 95% results will be compiled and statistically analyzed by using SPSS software version-22.

Results:

The results will be calculated after compilation of data by SPSS software version 22

Conclusions:

It will be concluded after completion of our research work.

Key Words:

Rheumatoid Arthritis, Females, OPD

Introduction

Rheumatoid arthritis is a long-term autoimmune disorder that primarily affects joints. It is the most common form of polyarticular inflammatory arthritis characterized by persistent synovial inflammation, bony erosions and progressive articular destruction leading to varying degree of physical disability. **(Wikipedia, 2017)**

It typically affects the small joints of the hands and the feet, and usually both sides equally in a symmetrical distribution, though any synovial joint can be affected. In patients with established and aggressive disease, most joints will be affected over time. More significant inflammatory manifestations may lead to serious pathology, such as fibrosis in the lungs, inflammation affecting the lining of the heart and lungs (pleural and pericardial effusions), or vasculitis. Vasculitis results in inflammation of the inner lining of the blood vessels and may lead to potentially devastating effects for whichever organ is supplied by the affected blood vessels. Examples of vasculitis are scleritis of the eye, a painful and potentially sight-threatening vasculitis, and peripheral neuropathy, where nerves are irreversibly damaged leading to weakness or sensory abnormalities. Inflammation of the joints can also be life threatening when it affects the neck, causing potentially unstable articulations between the bones, and inflammatory pannus. This

combination of bone deformity and swollen inflammatory tissue can press on the spinal cord, leading to ischemia and widespread neurological consequences affecting all four limbs, bowel and bladder function, or the respiratory muscles and centers in the brain stem that control respiration, potentially resulting in death. **(Lawrence RC, 1998)**

The most commonly used classification criteria for RA were drawn together in 1987 by a committee of the American College of Rheumatology and published as 'The American Rheumatism Association 1987 revised criteria for the classification of rheumatoid arthritis". According to the summary of 1987 ACR classification criteria for rheumatoid arthritis, Patients must have four of the seven criteria that include morning stiffness lasting at least 1 hour, swelling in three or more joints, swelling in hand joints, symmetric joint swelling, erosions or decalcification on x-ray of hand, rheumatoid nodules and abnormal serum rheumatoid factor. **(Arnett, 1987)**

The cause of RA is not fully understood, although doctors do know that an abnormal response of the immune system plays a leading role in the inflammation and joints damage that occurs. No one knows for sure why the immune system goes awry, but there is scientific evidence that genes, hormones and environmental factors involved. **(Arnett FC et al, 1987)**

There are several risk factors of rheumatoid arthritis such as sex, age, family history, smoking, obesity and testosterone. When talking about sex, women are more likely than men to develop rheumatoid arthritis. If we talk about age, rheumatoid arthritis can occur at any age, but most commonly begins in ages 40 and 60. People who have a close family member with rheumatoid arthritis may have a higher risk of developing it themselves. Experts say that the disease itself is not inherited, but rather the predisposition to develop it. If discussing smoking, regular smokers have a significantly higher risk of developing rheumatoid arthritis. Smoking makes the outlook of disease worse. Similarly the risk of RA increases with increase in BMI. Testosterone also affects it. A low level of this hormone may be a predictor of rheumatoid arthritis. **(MFMER, 2017)**

It affects 0.5-1% of population all over the world. The estimated prevalence of RA in developing countries is variable. Studies from Nigeria, Indonesia and Africa showed lower prevalence than that reported from the western countries, RA is a multisystem autoimmune disease which shows heterogeneity in presentation, clinical course, extra-articular systemic manifestations and associated co-morbidities. An increased mortality in RA patients has been evident over the last few decades. Male gender, rheumatoid factor, extra-articular manifestations and co-morbidity have been implicated as baseline predictors for increased mortality. Present study was designed to provide information regarding frequency, demography and associated co-morbidities of patients with RA who visited the rheumatology clinic at the tertiary care hospital. Another objective of this study was to determine the frequency of extra-articular manifestations which have not been yet established in RA patients of our population. **(Mayo, 2010)**

The drug management of RA can be considered under two headings. The first is the relief of symptoms, with pain relief being the number one priority for patients. The second is modification of the disease process so that radiological progression, which is closely correlated with progressive functional impairment, can be retarded or stopped The ultimate aim of management is

to achieve disease remission for the patient. Where remission cannot be achieved, the aim should be to minimize disease activity in order to optimise the chances of preventing progressive damage to joints with subsequent disability. The longer the remission period, or the least amount of disease activity that can be achieved, the better the long-term outcome. Analgesics, non-steroidal anti-inflammatory drugs (NSAIDs) and Conventional disease modifying antirheumatic drugs (DMARDs) can be helpful in relieving pain, where they are not contraindicated. **(Christian, 2016)**

It's a very serious problem in the females of our current population and not much research work has been done on it before. Many women are suffering each day due to rheumatoid arthritis so the intention of the community must be appreciated on this issue. The women must develop complete awareness of the determinants of this issue.

Literature Review

It affects 0.5-1% of population all over the world. The estimated prevalence of RA in developing countries is variable. Studies from Nigeria, Indonesia and Africa showed lower prevalence than that reported from the western countries, while the prevalence of RA in India (0.75%) is similar to that reported in white population from Manchester (0.8%). In the urban population of southern Pakistan, Karachi, the prevalence of RA is reported to be 0.142%,whereas in northern Pakistan the estimated prevalence is 0.55%. . **(Mayo, 2010)**

The study was conducted to examine the frequency of rheumatoid arthritis in females with ages 25-40 years in oslo country BMD in the femoral neck, total hip, and spine L2–4 (anterior-posterior view) was measured in 394 RA patients recruited from a validated county RA register (completeness 85%) comprising 721 women ages 25-40 years. BMD was measured with dual-energy x-ray absorptiometry, and age-specific values were compared with pooled values from a European/US population of healthy subjects free from earlier fractures, chronic diseases, and medications influencing bone metabolism. A multiple linear regression model was used to determine individual predictors of BMD.No statistically significant differences were found in demographic, disease activity, disease severity, or health status parameters between the RA register patients n whom BMD was measured and the remaining register patients. Femoral neck BMD was significantly reduced by 4.2% in the age group–59 years, and by 5.0% in those ages 60–70 years. For BMD in the total hip, the significant reductions were 3.7%, 6.0%, and 8.5% in the age groups 40–49 years, 50–59 years, and 60–70 years, respectively. No significant reduction in spine L2–4 BMD was found. A 2-fold increased frequency of osteoporosis was observed in all 4 age groups of RA patients compared with the reference population, ranging from 0% to 28.6% in the femoral neck, 0% to 29.9% in the total hip, and 1.8% to 31.5% in the spine. **(Deodhar AA, Woolf AD, 1996)**

Women aged 35 years and older, resident in the Barwon Statistical Division (BSD) and clinically diagnosed with RA 1994–2001 were eligible for inclusion as cases (n = 1,008). The control population (n = 172,422) comprised the entire female BSD population aged 35 years and older, excluding those individuals identified as cases. Incident fractures were extracted from the prospective Geelong Osteoporosis Study Fracture Grid. We calculated rate ratios (RR) and 95% confidence intervals (CI) to compare the age-adjusted rate of fracture between the RA and non-RA populations,

and used a chi-square test to compare proportions of fractures between women with and without RA, and a two-sided Mann–Whitney U-test to examine age-differences. Among 1,008 women with RA, 19 (1.9%) sustained a fracture, compared to 1,981 fractures sustained by the 172,422 women without RA (1.2%). Fracture rates showed a trend for being greater among women diagnosed with RA (age-adjusted RR 1.43, 95%CI 0.98-2.09, p = 0.08). Women with RA sustained vertebral fractures at twice the expected frequency, whereas hip fractures were underrepresented in the RA population (p < 0.001). RA status was not associated with the likelihood of sustaining a fracture at sites adjacent to joints most commonly affected by RA (p = 0.22). **(AIHW, 2010)**

A case–control study was nested within the Northern Sweden Health and Disease Study and the Maternity cohorts of Northern Sweden. Patients with RA were identified among. Blood donors whose samples had been taken years before the onset of symptoms. Control subjects matched for age, sex, date of sampling, and residential area were selected randomly from the same cohorts. Anti-CCP antibody and RFs were determined using enzyme immunoassays. Eighty-three individuals with RA were identified as having donated blood before presenting with any symptoms of joint disease (median 2.5 years [interquartile range 1.1–4.7] before RA). In samples obtained before the onset of RA, the prevalence of autoantibodies was 33.7% for anti-CCP, 16.9% for IgG-RF, 19.3% for IgM-RF, and 33.7% for IgA-RF (all highly significant compared with controls). The sensitivities fordetecting these autoantibodies >1.5 years and ≤1.5 years before the appearance of any RA symptoms were 25% and 52% for anti-CCP, 15% and 30% for IgM-RF, 12% and 27% for IgG-RF, and 29% and 39% for IgA-RF. In conditional logistic regression models, anti-CCP antibody and IgA-RF were found to be significant predictor of RA. **(Van Ventolin, 2000)**

This cross sectional study was conducted at Department of Orthopedics, Bahawalpur Victoria St Hospital, Bahawalpur from 1 January to 31 May 2014. The ethical approval was obtained from the ethical committee and informed consent was obtained from every patients. Patients of both sexes with knee pain, age from 40 to 70 years were included in this study. Participants were excluded if they had any specific medical condition affecting the knee joint (such as, tumors, septic arthritis, or rheumatoid arthritis). Physical examination of all the patients was done and x-ray of knee joint were also taken from every patients to assess the knee osteoarthritis. Weight and height of all patients was also measured to calculate BMI. Demographic like age, gender was also recorded. All the data was entered on pre-designed proforma. All the dada was entered in SPSS version 16. Chi square test was used to see the association between knee osteoarthritis and gender. P value ≤ 0.05 was considered as a total of 100 patients were included in this study. Mean age of the patients was 52.64 ± 8.8 years. Out of 100 patients KOA was found in 72% patients as shown in figure I. Out of 100 patients male were 36 (36%) and female were 64 (64%). Osteoarthritis was found in 72 (72%) patients in which 20 were male and 52 were female. Significant association was found between osteoarthritis and gender. out of 60 (60%) obese patients osteoarthritis was found in 56 (93.33%) patients and out of 40 (40%) non-obese patients.osteoarthritis was found in 16 (40%) patients. There is significant association between osteoarthritis and obesity. **(Ismail Abdul Wahab, 2011)**

Amongst 4900 patients with rheumatic symptoms, 633(12.9%) patients were diagnosed cases of RA. Out of 633 patients, 509 were females and 124 were males, making the ratio 4:1(F: M). Mean age of onset was 38.5 ± 12.4 years and 44.8 ± 13.12 years in females and males respectively. In all 17.48% of females and 6.45% of males belonged to the age group between 16-29 years, with 48.52% of females and 39.5% of males being between the ages of 30-49 years. Whereas 33.9% of females and 54.0% of males presented between 50-75 years of age group. RA factor was found to be positive in 74.4% patients. Among 509 females and 124 males with RA, 72.2% and 83% were seropositive respectively. As far as co-morbidities are concerned, hypertension was documented in 13.74% of patients, of whom 85.05% had positive RA factor. Ischaemic heart disease was found to be present in 6.63% of patients with RA (88.09% were seropositive). **(Syed Mahfooz Alam, 2005)**

OBJECTIVES:

Objectives of our study are:

- To determine the frequency of Rheumatoid Arthritis among females aged 20-40 years in OPD of Avicenna Medical College & Hospital, Lahore.
- To assess the determinants of Rheumatoid Arthritis among females.

OPERATIONAL DEFINITION:

Rheumatoid Arthritis:

Rheumatoid arthritis is a long-term autoimmune disorder that primarily affects joints. It is the most common form of polyarticular inflammatory arthritis characterized by persistent synovial inflammation, bony erosions and progressive articular destruction leading to varying degree of physical disability **(Wikipedia, 2017)**

Material and Methods

Study Variables:

a) Dependent variable: Rheumatoid Arthritis

b) Independent variable: Family History and Obesity

Study Design: Descriptive Cross Sectional study

Study Universe: Lahore

Study population: OPD Patients of Avicenna Medical College

Study setting: Avicenna Medical College

Duration of Study:

Commencement time: 29th Feb. 2017

Completion time: 17th March 2017

Sample size: Study size will be estimated using WHO software S size and by using formula of estimating a population proportion with specified relative precision. At confidence level of 95% with anticipated population proportion of 70% and relative precision of 10%. The minimum sample size to be taken is 100.

Sampling Technique: Simple Random Sampling

Sample Selection:

a. **Inclusion Criterion:**

1. Female patients aged 20-40 years.

b. Exclusion Criterion:

1. All males.

2. Female patients less than 20 years of age.

3. Female patients more than 40 years of age.

Social and Ethical Considerations:

1. Observed cultural & religious ethics.

2. Written consent will be obtained for interview from the principle.

3. Secrecy and confidentiality will be maintained.

4. The information about the names addresses etc. will not be disclosed to any one and will not be used for unethical purpose.

5. The procedures will be explained to the subjects clearly and were . kept sterile and painless.

6. Consent will be taken from the subject.

7. Data will not be disclosed to electronic or print media.

Data Collection Procedure: Questionnaires will be handed out to the participants and their answers will then be sorted out to analyze the different variables under study, the data will be collected by research team.

Data Analysis and Compilation Plan: The data will be compiled and analyzed by using SPSS software version-22 and appropriate statistical techniques. Data will be presented by means of tables, charts and diagrams.

Data Collection Tool: A semi structured questionnaire (pre-designed closed ended with few open ended questionnaire) will be used to collect information from patients.

Pre-Testing: Before carrying out the actual exercise of data collection, questionnaire will be tested on some subjects on experimental basis to observe any deficiency in questionnaire and ensure its Ethical and social acceptability.

ETHICAL DECLERATION:

I undertake that:

1. I will abide by the declaration of world medical association (WMA) made at Helsynki, (2008). regarding the ethical principles for medical research involving human subjects.
2. Patient's health and safety would be our priority.
3. The procedures shall be explained to the subjects clearly and shall be kept sterile and painless.

The confidentiality of the information shall be maintained

References

Arnett FC, Edworthy SM, Bloch DA, McShane DJ, Fries JF, Cooper NS, et al. The American Rheumatism Association.1987 revised criteria for the classification of rheumatoid arthritis; Arthritis Rheum 1988; 31: 315-24.

Brighton S, de la Harpe A, van Strahen D, Badenhorst J. The prevalence of rheumatoid arthritis in a rural African population. J Rheumatol 1988; 15:405-8.

Berkanovic E, Hurwicz ML. Rheumatoid arthritis and comorbidity, J Rheumatol 1990; 17: 888-92.

Darmawan J, Valkenburg HA, Muirden KD, Wigley RD. Epidemiology of rheumatic diseases in rural and urban populations in Indonesia: World Health Organization International League Against Rheumatism COPCORD study, stage I, Phase 2. Ann
Rheum Dis 1992; 51: 525-8.

Farooqi A, Gibson T, Prevalence of the major rheumatic disorders in the adult population of North Pakistan. Br J Rheumatol 1998; 37: 491-5.

Goronzy J, Cornelia M. Rheumatoid arthritis epidemiology, pathology and pathogenesis.Klippel JH, Wehand CM, Wortmann RL, ed. Primer on the rheumatic disease 11th ed. Georgia: William M, 1997; pp 155-74.

Gabriel SE, Crowson CS, O'Folon WM. Comorbidity in arthritis, J Rheumatol 1990; 26: 2475-9.

Hameed K, Gibson T, Kadir M, Sultana S, Fatima Z, Syed A. The prevalence of rheumatoid arthritis in affluent and poor

urban communities of Pakistan. Br J Rheumatol 1995; 34: 252-6.

Kuneda Y, Inaba M, Goto H, Nagata M, Henmi Y, Furumitsu Y, et al. Increased thickness of the arterial intima-media detected by ultrasonography in patients with rheumatoid arthritis. Arthritis Rheum 2002; 46: 1489-97.

Lipsily PE. Rheumatoid Arthritis. In: Fauci AS, Braunwald E, Raspur DL, Hauser SL, Lonjo DL, Jameson JL, eds. Haarrison's principles of internal medicine. 17th ed. New York: McGraw Hill, 2008; pp 2083-92.

Malaviya A, Kapoor S, Singh R, Kumar A, Pande I. Prevalence of rheumatoid arthritis in the adult Indian population. RheumatolInt 1993; 13: 131-4.

MacGregor AJ, Riste LK, Hazes JMW, Silman AJ. Low prevalence of rheumatoid arthritis in Black-Carribbeans compared with whites in inner city Manchester. Ann Rheum Dis 1994; 53: 293-7.

Silman A, Ollier W, Holligan S, Birrel F, Adebajo A, Asuzu MC, et al. Absence of rheumatoid arthritis in a rural Nigerian population. J Rheumatol 1993; 20: 618-22.

Symmons DPM, Barrett EM, Bankhead CR, Scott DGI, Silman AJ. The incidence of rheumatoid arthritis in United Kingdom: results from the Norfolk Arthritis Register. Br J Rheumatol 1994; 33: 735-9.

Van Doornum S, McColl G, Wicks IP, Accelerated artherosclerosis: an extrarticular feature of rheumatoid arthritis? Arthritis Rheum 2002; 46: 862-73.

Wolfe F, Mitchell DM, Sibley JT, Fries JF, Bloch DA, Williams CA, et al. The mortality of rheumatoid arthritis. Arthritis Rheum 1997; 37: 481-94.