

THE ARTICULAR INVOLVEMENT IN RHEUMATOID ARTHRITIS - A PROSPECTIVE STUDY

A. QAYYUM, ABID MEHMOOD AND NAZIR AHMED

Departments of Medicine, Quaid-e-Azam Medical College, B. V. Hospital, Bahawalpur

This prospective study was carried out in fifty patients of arthritis fulfilling the inclusion criteria of rheumatoid arthritis (RA). The study was conducted in the department of medicine, B. V. Hospital, Bahawalpur, during the period from February, 2000 to February 2001. Patients age 20 years were studied regardless of sex. They were admitted through emergency and out patients and diagnosed as cases of RA on the basis of history, clinical examination and laboratory investigations. According to this study, the incidence of rheumatoid arthritis was 1.05%, most common pattern at onset is insidious occurring in the third and fourth decades of life. Female to male ratio was 2.5:1. Small joints of hands were most commonly involved. Among the deformities, Boutonnier and Swan Neck deformity were found commonly. Most of the patients of RA presented insidiously and have symmetrical polyarticular involvement. This work was performed to study the mode of onset, pattern of joints involved and commonly encountered articular deformities in rheumatoid arthritis.

Key Words: Rheumatoid arthritis, articular involvement, deformities in RA.

INTRODUCTION

Rheumatoid arthritis is a chronic inflammatory disease of synovial joints of unknown aetiology and is typically characterized by symmetrical, destructive and deforming polyarthritis of small and large joints with systemic disturbances and extra-articular manifestations¹. Rheumatoid arthritis affects approximately 1% of adult population, with female to male ratio ranging from 2:1 to 4:1 and reaching a peak incidence in the fourth and fifth decades². It is postulated that rheumatoid arthritis results from interaction between genetic and environmental factors. Climate, geography and altitude do not affect the prevalence of the disease but does appear to influence the symptoms³. The prevalence of rheumatoid arthritis is nearly 0.9 to 1.98 % of the population in Pakistan⁴. Prevalence and incidence data from around the world confirmed that occurrence of rheumatoid arthritis varies between populations⁵.

The role of genetic factors is established by the demonstration of an association with class II major histocompatibility gene complex antigen, (HLA-DR4)⁶. It is also suggested that manifestations of rheumatoid arthritis are characterized by hyperplasia of the synovial lining cells, angiogenesis, and infiltration of mononuclear cells resulting in pannus formation, cartilage erosion

and ultimate joint destruction⁷. IFN-gamma enhances IL-12 production via both CD40-CD154 dependent and independent pathways in RA synovium and also plays an important role in the development of synovitis⁸.

Rheumatoid arthritis is a very disabling condition and has a significant social, economical and psychological impact on patients and their families. Patients are handicapped in terms of activities and difficulties in performing different social roles; and patients with these handicaps feel more emotional distress.

Bahawal Victoria Hospital is situated in the periphery of Punjab and its catchment area is mostly rural. Most of the citizens are illiterate and live in a very low socio-economic set up. Therefore, most of the patients ignore their disease at the initial stage and present when the complications start to develop. So, it is important, if the patients with RA are diagnosed early and managed properly, at least the interval between the onset of the disease and development of complications can be prolonged.

Keeping in view the aforementioned facts, this study was conducted in the department of medicine B. V. Hospital, Bahawalpur to see the pattern of onset, joint involvement and articular complications of RA in our region.

MATERIALS AND METHODS

A total of 50 patients having age above 20 years were studied regardless of sex. They were admitted to different medical wards of Bahawal Victoria Hospital, through emergency and out patient departments and diagnosed as a case of rheumatoid arthritis on the basis of history, clinical examination and laboratory investigations.

Inclusion criteria

Patients fulfilling the following criteria were included in this study:

1. Patients having age above twenty year.
2. Both males and females were included.
3. The patients fulfilling four or more criteria among the following:
 - (a) Morning stiffness more than one hour.
 - (b) Arthritis of three or more joints of six weeks duration.
 - (c) Arthritis of hand joints of six weeks or more.
 - (d) Symmetrical arthritis of six weeks or more
 - (e) Rheumatoid nodules.
 - (f) RA factors positivity.
 - (g) Radiological evidence of rheumatoid arthritis.

Exclusion criteria

Patients presenting with arthritis but proved to be the cases of one of the diseases given below are excluded from the study.

Systemic lupus erythematosus, osteoarthritis, gout, mixed connective tissue disease, reactive arthritis and rheumatic fever.

Methodology

According to the inclusion criteria, patients were assessed after detailed history, clinical examination and laboratory tests. The results of the study were assessed statistically on simple percentage basis and were compiled in graphic and tabulated form.

The functional status of the patients was assessed on the basis of ARA classification which is given below:

- Class 1:** Complete ability in all activities of daily living.
- Class 2:** Normal activity can be performed with discomfort or limited motion in joints.
- Class 3:** Activity limited to self care and a few occupational duties.

Class 4: Incapacitation, either by being bed –or wheelchair-bound. Little or no self –care possible.

RESULTS

Incidence of RA in indoor patients

During the study period, 50 cases of RA were selected out of 4750 admitted to medical wards of B. V. Hospital. The incidence of rheumatoid arthritis among admitted patients was found to be 1.05% during the study period.

Age and sex distribution

Maximum number of patients was seen in age group of 31-45 years. As is given in table 1.

Table 1: Age distribution in 50 cases.

Age Distribution	Number of Patients
20 – 30	7
31 – 50	31
51 – 70	12

In a total of 50 patients, 30 were females and 20 were males, with the sex ratio of 2.5:1. As is shown in table 2.

ARA Functional Classification

Among 50 cases, 10 patients belong to functional class 1, 34 cases were in functional class 2, 4 cases were in functional 3, whereas 2 were in functional class 4, (table 3).

Table 2: Sex ratio in 50 cases.

Total No. of Patients	Females	Males	Female : Male
50	30	20	2.5-1

Pattern of onset

In this study insidious onset was found to be most common pattern of presentation, 90% of cases presented with this mode of onset. Acute and systemic were second common presentations. Polyarticular involvement was seen in 46 cases (92%), 3 had oligoarticular involvement (6%) whereas one case had a monoarticular involvement (2%). Symmetrical arthritis was seen in 48 cases (96%) whereas 2 cases present with asymmetrical arthritis (4%) (table 4).

Table 3: Incidence of ARA classification.

Functional Class	No. of Female	No. of Male	Total	Percentage
CLASS 1	6	4	10	20%
CLASS 2	20	14	34	68%
CLASS 3	3	1	4	8%
CLASS 4	1	1	2	4%

Table 4: Pattern of onset in 50 cases.

Onset	No. of Cases	% age
Acute	1	2%
Insidious	48	96%
Systemic	0	0%
Palindromic	1	2%
Polyarticular	46	92%
Oligoarticular	3	6%
Monoarticular	1	2%
Symmetrical	46	92%
Asymmetrical	4	8%

Pattern of Joint Involved

In this study the most commonly involved joints were the small joints of hands, whereas second most commonly affected joints were the small joints of feet. Percentage of affected joints in rheumatoid arthritis is given in table 5.

Articular Complications of RA

The most common complication of rheumatoid arthritis in this study was Boutonniere deformity, in 50 cases, 40 (80%) showed this deformity. The second most common deformity of RA was Swan-neck deformity, 36 (72%) of 50 cases suffered from this deformity. Other common deformities included ulnar deviation of wrist 25 patients (50%), valgus deformities of ankles 21 cases (42%) and valgus deformities of toes 20 cases (40%) (Table 6).

DISCUSSION

Rheumatoid arthritis is an autoimmune disease of unknown aetiology. Clinically typical rheumatoid arthritis is characterized by symmetrical polyarthritis especially when it involves small joints of hands. However, atypical and asymmetrical pres-

entations may also be found. It is a destructive type of arthritis resulting in different types of deformities and complications due to which patients not only feel difficulties in discharging their daily activities but also become burden on their families. In this way, this disease not only affects the patients physically but also morally, economically and socially. Very little data is available regarding the articular complications of RA in Pakistan. The present paper is an attempt to observe the various articular complications of RA.

The overall incidence of patients with RA admitted to B.V.H. Bahawalpur was 1.05%. This result is similar to the result of study conducted by David et al. in which he described that RA involves 0.5% to 1% of the U S population⁹. The average age of onset of RA in this study was found between third and fourth decade of life. These results correlate with the results of the study carried out by Sokoll et al. According to them the median age of onset was 45-51 years¹⁰. The fact that rheumatoid arthritis is more common in females as compared to males is well established in this study. Among 50 cases, 30 were females and 20 were males; and female to male ratio was 2.5:1. The result of the study conducted by Sokoll et al. showed female to male ratio of 1.9:1¹⁰. In their study 31 patients were females and 16 were males.

The present study shows that the insidious onset of the disease is the most common presentation of rheumatoid arthritis. In a total of 50 cases, 48 (96%) presented with insidious onset. Among 50 cases 46 (92%) presented with polyarticular and 46 (92%) with symmetrical involvement. One case (2%) out of 50 had asymmetrical and 3 patients (6%) had oligoarticular involvement. Bilechot et al. found insidious onset of rheumatoid arthritis in all patients. In a study 36 patients all presented with insidious onset¹¹. He and his colleague also found symmetrical polyarthritis in all the 36 cases. The patients in this study were classified on the basis of ARA functional classification. Among 50 cases 10 (20%) were in class 1, 34 (68%) were in class 2, 4 (8%) were in class 3 and 2 (4%)

were in class 4. Therefore, the majority of patients were in class 2. Bilechot et al, observed that most of the patients were in class 2¹¹.

Regarding the pattern of different joint involvement in RA, the most commonly involved joints were the small joints of the hands and feet. Metacarpophalangeal joints were involved in 48 cases (96%), proximal interphalangeal joints were

involved in 44 cases (88%), wrists were involved in 43 cases (86%) and distal interphalangeal joints of the feet were involved in 42 cases (84%). These results correlate with the results of the study conducted by Sokoll et al. which also showed that the most commonly involved joints were the small joints of hand and wrists¹⁰.

Table 5: *Affected joints in Rheumatoid arthritis.*

Joints involved	No. of Patients	Female	Males	Percentage
Metacarpophalangeal joints	48	29	19	96%
Proximal interphalangeal	44	26	18	88%
Distal interphalangeal	15	9	6	30%
Wrist	43	26	17	86%
Elbow	40	26	14	80%
Shoulder	29	16	13	58%
Cervical spine	23	16	7	46%
Temporoamandibular	10	6	4	20%
Metatarsophalangeal	42	25	17	84%
Ankle	37	23	14	74%
Knee	40	27	13	80%
Hip	11	6	5	22%

Table 6: *Articular complications of Rheumatoid arthritis.*

Joints	Deformities	Females	Males	Total	%
Fingers	• Boutonnier	26	14	40	80%
	• Swan-neck	23	13	36	72%
	• Z deformity of thumb	20	14	34	68%
	• Ulnar deviation	18	7	25	50%
	• Subluxation	4	1	5	10%
Wrist	• Subluxation	12	4	16	32%
Elbows	• Fixed Flexion	12	2	4	8%
Shoulders	• Superior subluxation	2	1	3	6%
Neck	• Atlanto-axial subluxation	1	1	2	4%
Knees	• Valgus deformity	11	6	17	34%
Ankles and subtalar	• Valgus deformity	13	8	21	42%
Midfoot	• Pes planus	5	2	7	14%
Toes	• Valgus	12	8	20	40%
Hips	• Fixed Flexion	2	1	3	6%

In this study the most common complications were Boutonnier deformity and Swan neck deformity. Boutonnier deformity was found in 40 cases (80%) out of 50 patients, Swan-neck deformity was found in 36 cases (72%) out of 50 patients, Z deformity of thumb was seen in 34 cases (68%) while valgus deformity of ankle was seen in 21 cases (42%), of toes in 20 cases (40%) and of knee in 17 cases (34%). Similar observations were made by Bilechot and others¹¹.

CONCLUSION

Rheumatoid arthritis is a progressive and destructive disorder of joints. The disease results ultimately in great disability. There is ignorance and illiteracy among the local population, so they do not bother about the disease in the initial stages. The patients usually seek treatment when they develop either acute exacerbation or any complication of RA. Most of the patients in this study showed articular complications involving the small joints of the hands and they were in functional class 2 or 3. A few patients were in class 4 and they were totally bed ridden and depended on their families. In this way rheumatoid arthritis not only affects the personnel life of the patients but also his family life. Therefore, it is essential that the disease should be diagnosed at an early stage and the patients be properly advised about the course and the outcome of the disease.

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