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STUDY TO DETERMINE THE DISTRIBUTION PATTERN AND PREVALENCE OF RHEUMATOLOGICAL DISORDERS

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Abstract:
Aims: *To assess the frequency and distribution of rheumatic diseases in a rheumatology department of a tertiary care hospital.*
Methods: *This retrospective study was conducted at the Rheumatology department of Jinnah Hospital, Lahore for two-years from 2018 to June 2020. The diagnosis was made on the basis of clinical criteria supplemented with the necessary tests.*
Results: *The total number of patients was 772, with the majority of women (F: M ratio 1.3: 1). The mean age was 46.9 (range 13-83) years. The majority (85.9%) were in the 3rd to 6th decades. The most common were degenerative diseases (49.9%), followed by inflammation (33.5%), soft tissue rheumatism (7%), metabolic bone disease (4.8%) and connective tissue diseases (2.5%). The most common disease was rheumatoid arthritis (27.7%), followed by osteoarthritis of the knees (26.2%) and the spine (23.4). Tendinitis, osteoporosis, fibromyalgia, and systemic lupus erythematosus were dominant in 5.6%, 4.8%, 1.4%, and 1.3% of cases, respectively. Common comorbidities were diabetes mellitus (87.9%), hypertension (22.2%), ischemic heart disease (12.4%), dyslipidemia (10.1%), fatty liver (7.9%), chronic kidney disease (6.9%) and hypothyroidism (4.5%). The most frequently prescribed medications were non-steroidal anti-inflammatory drugs (93%), disease-modifying anti-rheumatic drugs (28.9%), and prednisolone (10.6%). Physiotherapy was required in 13.3% of cases. A different combination of treatment was required in 56.6% of cases. Adverse reactions occurred in 12% of patients receiving methotrexate.*
Conclusion: *Osteoarthritis of the spine and joints was more common, but rheumatoid arthritis was the most common disease.*

Keywords: *morbidity, rheumatological diseases.*

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INTRODUCTION

Rheumatology covers many different diseases, not only inflammatory rheumatic and systemic diseases, but also degenerative diseases of the joints and spine, soft tissue rheumatism and metabolic bone diseases[1-2]. Rheumatism is the common name for many pains and ailments that do not have a specific name yet. Rheumatic diseases are a common cause of disability and a heavy burden on public health. In the UK, as many as 1 in 4 new consultations in general practice concern symptoms of the musculoskeletal system[3-4]. Most musculoskeletal disorders in women and show a strong relationship with aging. Rheumatological diseases are the most common cause of physical disability in the elderly, and about a third of all people with physical disabilities have rheumatological etiological disorders as the main cause. Rheumatological diseases remain clinically demanding, but a satisfactory group of disorders for internists 7 Laboratory and imaging techniques have significantly increased the incidence diseases, but a clinical diagnosis based on criteria specific to each rheumatological condition is still unknown. The incidence of rheumatological disorders varies significantly depending on environmental factors, ethnicity, and even geographic area of the same ethnicity[5-6]. In the United States, the incidence of rheumatoid arthritis (RA) has gradually decreased since the early 1960s, while the incidence of gout doubled between 1969 and 1985 and then increased by 8 0% from 1990 to 1999[7-8]. The Community Oriented Program for Control of Rheumatic Disorders study found that rheumatic diseases were a common cause of morbidity, disability and job loss in rural and urban Pakistani communities[9]. This study describes the spectrum of rheumatic disorders.

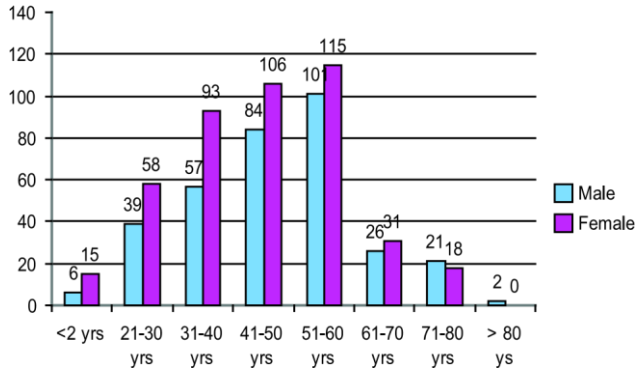
METHODS:

This retrospective study was conducted at the Rheumatology department of Jinnah Hospital, Lahore for two-years from 2018 to June 2020 with the aim of describing the pattern of rheumatological disorders in patients coming to the clinic, describing specific types of rheumatic disorders, assessing the prevalence of autoimmune markers in inflammatory diseases rheumatism and connective tissue diseases and to monitor for side effects of medicines used in these patients.

All patients who came to the rheumatology department were consecutively and intentionally included in this study, regardless of age and gender. Most of the patients were referred from outpatient departments, and some patients came to follow-up after discharge from inpatient departments. Patients with non-rheumatic diagnosis or incomplete data were excluded from the study. Clinical diagnoses / differences have been established on the basis of an extensive history and clinical studies supplemented with appropriate laboratory tests. Various diagnostic criteria were used to make the diagnosis; for example, when we entered the clinic, we used the revision criteria for RA of the American Society of Rheumatology but after introducing the ACR / EULAR criteria for RA, we adopted these newer classification criteria at our clinic. For patients who had already been diagnosed and treated with RA by registered physicians, we re-evaluated previous clinical and laboratory documents, if available, and considered them as RA patients. For ankylosing spondylitis (AS), the modified criteria from New York were used. Systemic lupus erythematosus (SLE) was diagnosed using the revised American Rheumatism Association Criteria for systemic lupus erythematosus. We used the Kahn criteria for mixed connective tissue disease (MCTD). In polymyositis, dermatomyositis, and systemic sclerosis, appropriate clinical features, muscle / skin biopsy, and autoantibodies helped to confirm the diagnosis. Appropriate clinical presentation and the presence of negative birefringence crystals in synovial polarized light microscopy with or without high serum uric acid levels were used for the diagnosis of gout. USA and any value ≥5U / ml were considered positive. HLA B-27 serotype was detected in a micro lymphocytotoxicity assay using the One Lambda kit, USA. Antinuclear (ANA) and anti-ds-DNA antibodies were detected by ELISA. The kits used for ANA were DIA.PRO, Italy and a sample: control ratio> 1.1 was considered positive. For anti-ds-DNA, the cut-off value> 25 U / ml was considered positive. Data collection and analysis All necessary data was recorded in the prepared data sheet from the rheumatology guide for patients and the clinical registry. Data was analyzed using SPSS version 18.0 and presented in the form of figures and tables.

RESULTS:

In total, 804 patients attended 2,491 times over two-years at the rheumatology clinic. 32 patients were excluded from the study due to incomplete data, non-rheumatological diagnosis, or other reasons. So eventually 772 patients were included in this study. Patients visited the rheumatology clinic 3.1 times on average during the study period, but the incidence was higher in arthritis, especially in RA (7.2 times). Women were 43.6 years old and men were 33.6 years old, the female to male ratio was 1.3: 1. Their mean age was 46.9 ± 11.3 (range 13-83) years. The majority (85.9%) of patients were in the 3rd to 6th decade. The distribution of patients by age is shown in Figure 1.



The patients were divided into 6 groups (Table I).

Table I: *Distribution of patients according to diagnoses*

Diagnoses	Number of patients	Percent of all patients	Sex distribution (F:M)
Inflammatory joint and spine diseases	259	33.5	1.8:1
Rheumatoid arthritis	214	27.7	2.5:1
Ankylosing spondylitis	17	2.2	1:3.3
Psoriatic arthritis	12	1.5	1:1.4
Gout	16	2.1	1:1.3
Degenerative joint and spine diseases	385	49.9	1:1
Knee osteoarthritis	202	26.2	1:1.1
Lumber spondylosis	181	23.4	1:1.5
Cervical spondylosis	76	9.8	1:1.4
Nodal osteoarthritis	2	0.2	2:0
Connective tissue diseases	19	2.5	8.5:1
Systemic lupus erythematosus	10	1.3	10:1
Polymyositis/ Dermatomyositis	5	0.6	1.5:1
Systemic sclerosis	2	0.2	2:0
Mixed connective tissue disease	2	0.2	2:0
Soft tissue rheumatism Fibromyalgia	5411	71.4	1.1:14.5:1
Tendinitis	43	5.6	1:1.3
Metabolic bone diseases Osteoporosis	37	4.8	2.1:1
Others	18	2.3	
Septic arthritis	4	0.5	1:3
Hemophilic arthritis	2	0.2	2:3
Tubercular arthritis	5	0.6	0:2
Undifferentiated arthritis	7	0.9	1:2.5

The most common diseases were degenerative diseases of the joints and spine (49.9%), followed by inflammatory diseases (33.5%). Table I lists the common diseases in each group with their frequency and gender ratio. The most common diagnosis was RA (27.7%), followed by osteoarthritis of the knee (26.2%) and lumbar spine (23.4%). The occurrence of immunological markers in inflammatory and connective tissue diseases is presented in Table II.

Table II: Prevalence of immunological markers in inflammatory and connective tissue disorders

Disease	Marker	Done in	Positive	Percent
RA	RF Anti-CCP Ab	19496	13269	6872
AS	HLA B27	12	8	67
SLE	ANA Anti-dS DNA	1010	107	10070
PSS	Anti Scl 70	2	2	100
MCTD	Anti-RNP Ab	2	2	100

Ninety-three percent of patients were receiving non-steroidal anti-inflammatory drugs (NSAIDs), 28.9% disease-modifying anti-rheumatic drugs (DMARDs), 10.6% prednisolone, 13.3% physiotherapy, of which 56.6% required different combinations at least initially.

Table III: *Common comorbidity of the study population*

Comorbidity	Frequency	Percent
Diabetes mellitus (DM)	679	87.9
Hypertension	171	22.2
Ischemic heart disease (IHD)	96	12.4
Chronic kidney disease (CKD)	53	6.9
Chronic obstructive pulmonary disease (COPD)	21	2.7
Hypothyroidism	35	4.5
Dyslipidemia	78	10.1
Fatty liver	61	7.9

Seventeen patients had to discontinue methotrexate (MTX) due to elevated ALT levels, and another 9 due to mucositis and pancytopenia. One patient with AS developed reversible azoospermia from sulfasalazine. No serious adverse reaction associated with NSAIDs has been reported.

DISCUSSION:

The prevalence of rheumatic disorders in developing countries is largely unknown. In the present study, we tried to describe the incidence of various rheumatic diseases in the Pakistani population in hospitals, although this may not reflect the true incidence as in the COPCORD study. The total number of patients was 772, with the majority being women (F: M ratio 1.3: 1). In a similar clinical study in Belgium, 69% of patients were women[10-11]. The mean age was 46.9 years (13-83). In Belgium, the average age was 54 years. A similar patient demographic pattern was observed in two different cities of Pakistan rheumatology clinics (although these were unpublished data). In this study, osteoarthritis was the most common (49.9%) followed by inflammatory diseases of the joints and spine (33.5%), soft tissue rheumatism (7%), connective tissue disease, and metabolic bone disease. In one clinical study in Nepal, the incidence of disease was as follows: soft tissue rheumatism (40%), arthritis (21.36%), bone and cartilage disease (21.06%), connective tissue disease (4.74%), and metabolic bone diseases (3.85%) 7 Vanhook et al. found joint and spine inflammation in 37%, soft tissue rheumatism in 37%, degenerative joint and spine diseases in 36%, metabolic bone diseases in 17% and connective tissue diseases in 5%. Osteoarthritis of the knee was the most common degenerative disease in this study, followed by lumbar spondylosis[12-13]. Knee OA was most common in Nepal and Pakistan. In turn, degenerative spine disease was the most common in Belgium. In our study, most of the patients had DM, were overweight or obese, were elderly, and had OA. Of the inflammations, RA was the most common disease (82.6%), followed by AS. In other studies, RA was the most common arthritis. In the present study, the F: M ratio in RA patients was 2.5: 1, in Nepal it was 8.7: 1, in Belgium 2.3: 1.7 AS was predominant in younger men. Gout occurred in

2.1% of cases, all were obese and had CKD as a risk factor. Risk factors for gout in Nepal were hypertension, obesity, dyslipidemia and impaired glucose tolerance7. Soft tissue rheumatism was less common in our study and was mainly associated with DM. Fibromyalgia (FM) was diagnosed in 1.4% of cases in this series. On the other hand, FM was found in 19.88% in Nepal and 10% in Belgium, etc. Social and economic factors in Pakistan were influencing the situation, while psychosocial and alcoholic factors were taken into account in Western societies. SLE was the most common connective tissue disease. Dermatomyositis, PSS and MCTD were diagnosed in 3, 2 and 2 cases, respectively. One patient had secondary antiphospholipid syndrome. SLE was present in 1.3% of the cases[13]. In Nepal it was 0.89%, in Hong Kong 7 0.06%. Osteoporosis was present in 4.8% of cases, which is much lower than in other studies. One possible explanation might be that, as a specialist endocrinology hospital, many cases of osteoporosis are treated by endocrinologists. The most common comorbidities were DM, followed by hypertension, IHD, and CKD. COPD was the most common comorbid disease in Nepal, reflecting the high smoking rate in the Nepalese population. NSAIDs were the most commonly prescribed drugs. Ten percent of the patients required corticosteroids. All RA patients received DMARDs, mainly MTX, along with folic acid supplementation. A similar prescription pattern was observed in Nepal and Pakistan[14]. In 1 case, tocilizumab was administered with significant improvement, but the patient discontinued treatment due to higher costs. A significant proportion of patients, mainly with rheumatism of soft tissues, underwent various forms of physiotherapy. No serious drug-related adverse events were observed in this study, with the exception of elevated ALT levels, mucositis, and bone marrow suppression in 26 cases. These patients took MTX daily by mistake or for long periods without observation[15]. This study had some limitations. Prevalence does not reflect the actual prevalence among the Pakistani population. Here, most of the patients were diabetic, and it was also unclear whether rheumatological disorders were similarly distributed in non-diabetic populations. Therefore, a larger and multi-center study could be conducted in the future.

CONCLUSION:

From this retrospective study, it can be concluded that degenerative diseases are more common than inflammatory diseases, and RA is the most common disease in the series that requires lifelong follow-up to properly control the disease and avoid drug-related side effects.

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