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ORIGINAL ARTICLE

Characteristics of Rheumatology Consultations in the Emergency Department: A Retrospective Study in a Single-center Tertiary Hospital

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Abstract

Background: This study aimed to analyze the age, gender, comorbidities, diagnosis of rheumatic diseases, symptoms at presentation, consultation diagnoses, additional consultations and hospitalization rates of adult patients who received a rheumatology consultation from the emergency department (ED) of a tertiary hospital.

Methods: We evaluated adult ED patients referred for rheumatology consultation from 2019 to 2022. Coronavirus disease consultations and repeated consultations were excluded. The demographic information of the patients, complaints regarding their presentation to the ED, known inflammatory rheumatological diseases (IRD), comorbidities, departments where consultation was requested, consultation final diagnoses, the clinic to which they were referred if they were referred from the ED, discharge or exitus information were recorded.

Results: The consultations of 57 patients referred to rheumatology from the ED were evaluated. 75.4 % (n=43) of the patients referred had previously been diagnosed with an IRD. The most frequently referred patients were those diagnosed with rheumatoid arthritis (17.5 %), Behçet's disease (14 %) and vasculitis. The most common complaints of patients included musculoskeletal pain (n= 18), fever and malaise (n=15) . The most common diagnoses among patients with IRD were disease flare (n=16) and infection (n=12). Of the patients referred, 28 (49.1%) were hospitalized. None of the patients died during their stay in the emergency department; however, 3 patients died in the inpatient service to which they were referred.

Conclusion: The majority of patients evaluated by rheumatologists in the ED have known IRD and are diagnosed with disease activation, infectious pathologies, and drug intoxication. True rheumatologic emergencies are rare, but ED physicians should be aware of serious and life-threatening conditions.

Keywords: Consultation, emergency, rheumatology

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INTRODUCTION

The emergency department (ED) is a unit that provides continuous, uninterrupted service to patients presenting with a range of emergency conditions. A multidisciplinary approach is essential for the accurate diagnosis and effective treatment of patients who present to the ED. Consultation involves seeking the opinion of a specialist for diagnosis and treatment planning. It is for this reason that EDs frequently require consultation (1,2).

Given the infrequency of rheumatological emergencies, the number of rheumatology consultations requested from the ED is relatively low (3,4). Rheumatologic diseases are characterised by a chronic course and a gradual progression. However, there is a possibility of life-threatening or organ-threatening emergencies arising from acute exacerbations, disease-related complications, or drug side effects, so it is important to recognize these. The development of these conditions may occur either subsequent to a patient's diagnosis or during their initial visit to a medical professional.

There are not many studies in the literature analyzing patients referred from the emergency department to rheumatology. The objective of this study was to examine the age, gender, comorbidities, diagnosis of rheumatic diseases, symptoms at presentation, consultation diagnoses, additional consultations and hospitalization rates of adult patients who received a rheumatology consultation from the ED of a tertiary hospital.

MATERIALS AND METHODS

Patients referred to rheumatology clinic from Ankara Bilkent City Hospital adult ED between 2019 and 2022 were retrospectively scanned through electronic patient records. Rheumatology consultations pertaining to the treatment planning of patients with coronavirus disease 2019 (COVID-19) and repeated consultations of the same patient (within 10 days) were excluded from the study. Patient demographics, presenting complaints, known inflammatory rheumatic diseases (IRDs), comorbidities (we noted comorbidities from ICD codes and electronic patient records), departments where consultation was requested and rheumatology consultation times, consultation final diagnoses, the clinic to which they were referred if they were referred from the ED, discharge or exitus information were recorded. The final diagnoses of the consultation were decided based on the rheumatologist and relevant specialist physicians.

The data were analysed using the SPSS (version 22.0, IBM Corp., Armonk, NY, USA). The normality of the continuous variables was assessed using the Shapiro-Wilk test. Normally distributed numerical data were presented as mean ± standard deviation, while non-normally distributed numerical data were presented as median (interquartile range (IQR) or minimum and maximum). Categorical variables were presented in numerical form and as percentages.

The study was approved by the Ankara Bilkent City Hospital Clinical Research Ethics Committee (Approval no: E1-22-3033, Date: November 16, 2022) and was conducted in accordance with the Declaration of Helsinki.

RESULTS

The number of rheumatology consultations between 2019 and 2022 was 22618. The majority of these consultations were patients referred from wards and intensive care units regarding treatment arrangements during the COVID-19 pandemic. The number of consultations directed to rheumatology from ED and emergency intensive care units, excluding COVID-19 patients, was 265. After excluding emergency intensive care unit consultations and repeated consultations of the same patient, consultations of 57 patients from the ED were evaluated.

The demographic profile of the patients referred is as follows: 52.6 % (n=30) of the patients were female, the median age was 45 years, and 21 % (n=12) of the patients were from the geriatric population, defined as individuals over the age of 65 years. (Table 1).

In the present study, 75.4 % (n=43) of the patients referred had previously been diagnosed with an IRD. The most frequently referred patients were those diagnosed with rheumatoid arthritis (RA) (17.5 %), Behçet's disease (14 %) and vasculitis (10.5 %, of which 4 cases were small vessel vasculitis and 2 cases were large vessel vasculitis) (Table 2).

The prevalence of comorbidities other than IRD was 50.9 % (n=29). The most prevalent comorbidities were hypertension (33.3 %), diabetes mellitus (19.3 %), coronary artery disease (19.3 %), osteoporosis (10.5 %), hyperlipidaemia (8.8 %), chronic kidney disease (7 %), and malignancy (7 %), respectively.

Table 1. Clinical characteristics of patients consulted.

Clinical characteristics	
Age, year (median (IQR))	45 (28-65)
Rheumatology consultation duration, day (median (min-max))	1 (0-1)
Length of stay in the ED, day (median (min-max))	1 (0-3)
Gender	
Female, n (%)	30 (52.6)
Male, n (%)	27 (47.4)
Inflammatory rheumatologic disease	
Yes (%)	43 (75.4)
No (%)	14 (24.6)

ED: Emergency Department

Table 2. Distribution of inflammatory rheumatological diseases in consulted patients.

Inflammatory rheumatologic disease (n=43)	
RA, n (%)	10 (17.5)
Behcet's Disease, n (%)	8 (14)
Vasculitis, n (%)	6 (10.5)
AS, n (%)	5 (8.8)
FMF, n (%)	4 (7)
SLE, n (%)	4 (7)
Gout disease, n (%)	2 (3.5)
Still's Disease, n (%)	2 (3.5)
SJS, n (%)	1 (1.8)
MAS, n (%)	1 (1.8)

RA, Rheumatoid arthritis; AS, ankylosing spondylitis; FMF, Familial Mediterranean fever; SLE, systemic lupus erythematosus; SJS, Sjogren syndrome; MAS, macrophage activation syndrome.

The most common complaints of patients consulting rheumatology at the ED included musculoskeletal pain, fever and malaise (Table 3).

Table 3. Complaints of patients consulted from the emergency department.

Complaints	n, (%)
Musculoskeletal complaints	18 (31.6)
Fever and malaise	15 (26.3)
Abdominal Pain	8 (14)
Cutaneous complaints	8 (14)
Respiratory complaints	4 (7)
Cardiac complaints	3 (5.3)
Ocular complaints	1 (1.8)

The final diagnoses of the patients referred are given in Table 4. The most common diagnosis of patients with IRD was disease flare (37.2%), followed by infection (27.9%). Both instances of drug intoxication were methotrexate intoxications. One patient had RA, and the other had giant cell arteritis (GCA). One patient died after being transferred to the intensive care unit. Among the patients with known IRD diagnosis, 2 (4.6%) were referred preoperatively because they required emergency surgery due to fracture and acute appendicitis perforation, 7 (16.2%) were referred because of non-life-threatening drug side effects, and 4 (9.3%) had diagnoses other than their current rheumatologic disease (such as myocardial infarction (MI), cerebrovascular accident (CVA) and asthma attack). The reasons for consultation of 14 patients without known IRD were musculoskeletal pain, sudden vision loss, skin rash, and acute phase elevation. The final diagnoses of these patients were as follows: Four patients (28.5%) exhibited non-inflammatory musculoskeletal pain, two patients (14.2%) presented with drug-induced leukocytoclastic vasculitis (LCV), one patient (7.1%) manifested malignancy-associated LCV, one patient (7.1%) showed fever of unknown origin, septic arthritis in one patient (7.1%),

Table 4. Presenting Complaints at Hospital Admission			
	Patients with known IRD n= 43	**Patients without known IRD n= 14**	**Total n=57**
Disease activation, n (%)	16 (37.2)	1 (7.1)	17 (29.8)
Infection, n (%)	12 (27.9)	5 (35.7)	17 (29.8)
Drug intoxication, n (%)	2 (4.7)	0 (0)	2 (3.5)
Others, n (%)	13 (30.2)	8 (57.1)	21 (36.8)
IRD: Inflammatory rheumatologic disease			

infective endocarditis in three patients (21.4%), infectious aortitis (HIV aortitis) in one patient (7.1%), and GCA in another patient (7.1%).

In this study, 93% of patients referred to rheumatology were evaluated by a second specialty in the ED. The most frequently requested additional consultations were internal medicine (n=49, 86%) and infectious diseases (n=32, 56.1%) (Table 5).

Table 5. Consultations other than rheumatology.	
Other consultations, n (%)	53 (93)
Internal Medicine	49 (86)
Infectious diseases	32 (56.1)
Chest diseases	10 (17.5)
Dermatology	10 (17.5)
Cardiology	9 (15.8)
Hematology	8 (14)
Cardiovasculer surgery	5 (8.8)
Neurology	4 (7)
Nephrology	3 (5.3)
Ophthalmology	2 (3.5)

Of the patients referred to rheumatology in the ED, 28 (49.1%) were admitted to hospital (Table 6). Of those who were admitted, 7 (25%) had no known IRD. The distribution of patients with known IRD who were admitted was as follows: 5 RA, 4 vasculitis, 3 systemic lupus erythematosus (SLE), 2 Behçet disease, 2 gout disease, 1 ankylosing spondylitis, 1 Still's disease, 1 Sjögren syndrome and 1 macrophage activation syndrome (MAS). All six patients admitted to the rheumatology inpatient unit were admitted with disease flare, with two cases of vascular Behçet's disease, two cases of SLE, one case of GCA and one case of MAS. 10 patients were admitted to intensive care units; three of these had no known rheumatic disease, while seven had known IRD. Of the patients with IRD, 2 patients were admitted to intensive care units due to infection, 2 patients due to drug intoxication, 2 patients due to pulmonary hemorrhage, and 1 patient due to MI. None of the patients died during their stay in the ED; however, 3 patients died in the transferred units. One of the patients who died had MTX intoxication, and 2 patients had infective endocarditis.

Table 6. Hospitalization rates of patients.

	Patients Consulted n=57 (%)
Discharged from ED	29 (50.9)
Hospitalization	28 (49.1)
Transferred services	
Rheumatology	6 (10.5)
Other internal department	10 (17.5)
Intensive care unit	10 (17.5)
Surgical Departments	2 (3.5)

ED: Emergency Department

DISCUSSION

In the present study, 75.4% of patients had previously been diagnosed with IRD, with the majority of consultation diagnoses relating to rheumatic diseases, most commonly disease flare-ups. Rheumatoid arthritis (n=10, 17.5%) was the most frequently referred patient group in the ED among rheumatic diseases, followed by patients with Behcet disease and vasculitis. This finding aligns with the observations from previous studies, which reported that the majority of rheumatology patients seeking care in the ED did so with rheumatological complaints, with RA being the most prevalent condition (4-6). Only 7.1% (n=1) of patients with no known rheumatological diagnosis were diagnosed with rheumatological diseases, while 57.1% (n = 8) were diagnosed as infection, malignancy, or drug-induced LCV. Emergency physicians are advised to keep in mind that possible conditions such as drug toxicity, malignancy, or infection may mimic the findings of rheumatological diseases.

In a study conducted in Spain in 2013, 35% of patients referred to rheumatology had a diagnosis of inflammatory rheumatic disease, while more than half of these were newly diagnosed patients (7). This rate was higher than in our study. This difference may be due to the fact that in this study, all patients who came to the emergency department with musculoskeletal complaints were evaluated by a rheumatologist. This situation shows us that emergency physicians need to be trained on when rheumatic disease should be considered in patients presenting with musculoskeletal pain.

In studies conducted in Turkey, the rate of consultation requests to emergency services was reported to be in the range of 20-40% (1). As established in preceding studies, the departments most frequently requested for consultation from the ED were internal medicine, chest diseases, cardiology, infectious diseases, neurology and general surgery (8). In our study, the most frequently requested additional consultation in patients referred to us was internal medicine. This was followed by infectious diseases, chest diseases and dermatology. These results are consistent with the differential diagnosis of rheumatic diseases.

A number of studies examining emergency applications for rheumatological diseases in Turkey have found that the average age of patients is between 40 and 50 with the majority are women (4-6). In our study, the middle age group was similarly frequent.

In our study, similar to the study by Gürsoy et al., the most common symptom was musculoskeletal complaints (4). These types of complaints are usually not urgent. Patients should visit the outpatient clinic instead of going to the emergency room; however, patients could also apply to the emergency room when they first experienced symptoms of inflammatory rheumatic disease, if pain treatment was inadequate, if they had problems getting an appointment for the outpatient clinic, or if they did not want to wait for an appointment. While fever and malaise were the second most common presenting symptoms in our study, they were the most frequent in the study by San et al.(5). Fever and malaise may be observed due to the nature of rheumatic diseases or the increased risk of infection due to the immunosuppressive drugs used. Cutaneous complaints and abdominal pain were the third most common presenting symptoms. Abdominal pain may be seen due to gastrointestinal involvement of rheumatic disease, serositis associated with familial Mediterranean fever, drug side effects, or infection. Skin involvement in rheumatic diseases varies depending on the disease, but is frequently encountered. As in our study, infection, malignancy and med-

ication toxicity should be considered in the differential diagnosis, especially in patients referred with LCV. In this study, the least common presenting symptom was ocular complaints. One patient was referred in the ED with sudden vision loss and was diagnosed with GCA. Although temporal arteritis is not prevalent in the general population, it is the most common primary vasculitis in elderly individuals over the age of 50. GCA is one of our rheumatological emergencies, and the emergency physician must be highly aware of it (9).

Upon thorough examination of the final diagnoses, it was ascertained that the predominant rates were disease activation (29.8%) and infections (29.8%). Infections can develop as a potential result of immunosuppressive treatments and are included in the differential diagnosis of rheumatic diseases, therefore they occupy an important place in our daily practice.

Half of the patients (50.9%) had comorbidities other than inflammatory rheumatic diseases, the most prevalent of which were cardiovascular risk factors, including hypertension, diabetes mellitus, and coronary artery disease. In the present study, MI and CVA were among the non-rheumatic conditions for admission. This result is unsurprising in a patient group where cardiovascular risk factors are frequently observed.

The majority of patients are discharged from emergency services; however, a proportion are admitted to relevant departments, a further proportion are referred, and a final proportion die in the emergency service. According to studies conducted in Turkey, the discharge rates from emergency services vary between 81 and 87% (10-11). A study of patients who were asked for internal medicine consultation from the ED found a 45% rate of hospitalisation, while a another study found a 76% rate of hospitalisation for rheumatology patients from the ED (4,12). In the present study, the rate of hospitalisation was found to be 49.1%.

The study has certain limitations. Firstly, it has a retrospective design. This incomplete data raises concerns about the accuracy of electronic records. Secondly, given that it was a rheumatology subspecialty, there is a possibility that some patients were initially evaluated by internal medicine department in the ED and subsequently referred verbally by rheumatology, resulting in current consultation numbers may have been less than in daily practice. Another limitation is that the COVID-19 pandemic occurred during the time period in which the study was conducted. Pandemic restrictions may have reduced non-urgent ED visits, which may have affected the distribution of patients presenting to the ED. The single-center design and small sample size are also limitations, which limit the generalizability of the results.

In conclusion, the majority of patients evaluated by rheumatologists in the ED have known IRD and are diagnosed with disease activation, infectious pathologies, and drug intoxication. True rheumatologic emergencies are rare, but ED physicians should be aware of serious and life-threatening conditions. Multicenter studies should be conducted to confirm the findings of the study and to examine the outcomes of ED in rheumatic emergencies.

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Abbreviations list

COVID-19: Coronavirus disease 2019
CVA: Cerebrovascular accident
ED: Emergency department
GCA: Giant cell arteritis
IQR: Interquartile range
IRD: Inflammatory rheumatological diseases
LCV: Leukocytoclastic vasculitis
MAS: Macrophage activation syndrome
MI: Myocardial Infarction
RA: Rheumatoid arthritis
SLE: Systemic lupus erythematosus

Ethics approval and consent to participate

The study was approved by the Ankara Bilkent City Hospital Clinical Research Ethics Committee (Approval no: E1-22-3033, Date: November 16, 2022) and was conducted in accordance with the Declaration of Helsinki.

Consent for publication

This study is based on content analysis of the document. It does not contain any personal data.

Availability of data and materials

Data are available upon reasonable request

Competing interests

There are no conflicts of interest. The author have no financial or proprietary interest in the materials presented herein.

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Authors' contributions

All authors contributed to the study conception and design. Data collection were performed by all authors. Material preparation and analysis were performed by KO. The first draft of the manuscript was written by RKU. All authors read and approved the final manuscript.

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