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Rheumatoid Arthritis in Hail Region, Saudi Arabia

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Abstract:

Background: *Rheumatoid Arthritis (RA) is a chronic inflammatory disease most commonly exists in developed countries. The distribution of RA is common among females and it differs greatly from nation to nation.*

The aim of the study: *The aim of the current study is to determine the pattern of RA in both inpatient and outpatients who have been already diagnosed in the rheumatology unit at King Khalid Hospital (KKHH) during the years 2009-2012, Hail district, Kingdom of Saudi Arabia (KSA).*

Patients and Methods: *The current study is a retrospective study involving the diagnosed patients whom attending (KKHH) for the rheumatology clinic during the period of 4 years (2009-2012) Patients' data were gathered over the period of the study, according to the American College of Rheumatology (ACR) standards for RA.*

Results: *Females were found to be commonly affected than males and their ages were mainly over 35 years with negative family history. The majority of patients experienced an insidious onset with intermittent course. The commonest extra-articular manifestation was ophthalmological manifestations, while the main associated diseases were hypertension, diabetes mellitus and hypothyroidism. The main systemic features were arthritis, morning stiffness as well as fatigue. The most sensitive test in the diagnosis of RA was the anti-cyclic citrulinated peptide antibodies (anti-CCP AB).*

Conclusion & recommendations: *Demographic features were similar to those recorded by others. There is a must for more inclusive studies to detect the prevalence of RA in whole Hail region. A nationwide program for RA is needed to increase the awareness of Saudi population about the importance of early diagnosis of RA, which will help greatly the rheumatoid patients.*

Introduction

Rheumatoid Arthritis (RA) is a chronic inflammatory autoimmune disease that causes joint inflammation, cartilage destruction, and ligament weakness. It is further characterized by involving small and large joints, and synovial inflammation in areas of increased vascularity. The disease affects 21 million people around the world and costs billions of dollars annually in treatment and loss of earnings (Mohamed, 2012.).

The prevalence of RA differs from region to region with an average distribution of 1-3 % of the adult population (Wood & Badley, 1986), (Lawrence, 1977). In the Gulf region, it was reported in Iraqi in a percentage of 1% (Al-Rawi et al, 1978) and 0.36% in Omani people (Pountain, 1991).

It is necessary to know the burden of the problem in Kingdom of Saudi Arabia (KSA), because the disease has been known to put an economic load on the health sector and on the community as well. Unfortunately, the degree of the problem in the whole Saudi inhabitants is not fully estimated (Abdullah Al-Dalaan, 1998). However, the disease has been demonstrated to be the most frequent inflammatory arthritis among the hospital attendants in KSA, and seems to be less intense than those of the developed countries (Alballa, 1995).

In addition, Saudi Gazette demonstrated during the Pan Arab Rheumatology Conference (PARC) that there is an increasing risk of Saudis developing rheumatoid arthritis, with numbers rising to 250,000 in the near future. They added and highlighted the seriousness of RA and that it can

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lead to 70 percent malfunctioning joints in some advanced cases. They recommended that the Kingdom should establish a system for early diagnosis, which will help control future complications (Mohamed, 2012).

Although RA disease usually affects the synovium, most cases have systemic manifestations like fatigue, anemia and morning stiffness (Imboden et al, 2007).

Even though the onset of RA can affect any age, patients in fourth and fifth decades were highly affected (Tehlirian, 2008). The disease is often presented by remission and relapse features. Symptoms of RA involve symmetrical arthritis particularly in the small joints of the hands and feet. Fatigue, malaise, anorexia, fever and stiffness are also existing. Stiffness is usually most prominent in the morning and after periods of immobility. However, frequent extra-articular manifestations (EAM) occur, chiefly in male cases (Cimmino et, 2000). RA was known to decrease lifespan, yet it considerably alters the life quality in most cases (Imboden et al, 2007).

Table (1): Age distribution as a human factor contributing to rheumatoid arthritis in patients attending King Khalid Hospital-Hail region, Saudi Arabia during the year 2009- 2012.

Age group	2009	2010	2011	2012
<35years	5 (5.7%)	9 (8.3%)	10 (7.5%)	15 (7.9%)
<35years	82 (94.3%)	100 (91.7%)	123 (92.5%)	174 (92.1%)
Total	87	109	133	189

It was documented that early detection and management of RA is very essential to prevent the consequences of the disease and the joints' destruction, which occur as early as the first two years of the disease (Hanan, 2013). Diagnostic tests involve rheumatoid factor (RF) and Cyclic Citrullinated Peptide Antibodies (anti-CCP AB). Others were erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) (Vasishta, 2002), (Bushra et al, 2008). Unfortunately, no complete recovery was recorded for RA, but with early management, it is likely to decrease the joint destruction and consequences of the disease. Because of the deteriorating nature of the disease, lifelong treatment should to be done for some cases. The most effective treatment programs should include physical therapy, intermittent use of medications, and surgery in some cases (Pisetsky, 2001) (American College of Rheumatology, 2002) (O'Dell, 2004).

The aim of this study is to determine the pattern of RA in both inpatient and outpatients who have been already diagnosed in rheumatology unit at KKHH during the years 2009-2012, Hail district, KSA.

Methods

The current study is a descriptive (retrospective) study involving both inpatient and outpatients who have been already diagnosed in rheumatology unit at KKHH during the years 2009-2012.

- Patients were referred either by other health centers in the region or from other units in the hospital.
- All the studied patients were diagnosed according to the (ACR) standards for the diagnosis of RA (American College of Rheumatology, 2002), which are, morning stiffness with symmetrical arthritis of 3 joints or arthritis of hands with blood and radiological changes more than 6 weeks.
- Diagnostic tests were reported from the files with focusing on latex test for rheumatoid factor (RF), anti-cyclic citrulinated peptide antibodies (anti-CCP AB). Other tests were done as routine hospital step like urine analysis, complete blood picture, (ESR) and (CRP). In some patients Ca++ and Vitamin D were also recorded for treatment issues. (Leventis & Patel, 2008), (Buckley et al, 1996).
- Sociodemographics features, presenting manifestations, associated diseases and extra-articular manifestations were all collected from the patients' files.
- Informed consents were not needed as the data in the current study are collected from the patients' files.

Results

The results of the present work demonstrated the pattern of RA during the period of 2009 till 2012 in patients attended (KKHH) referred from different Hail areas and villages.

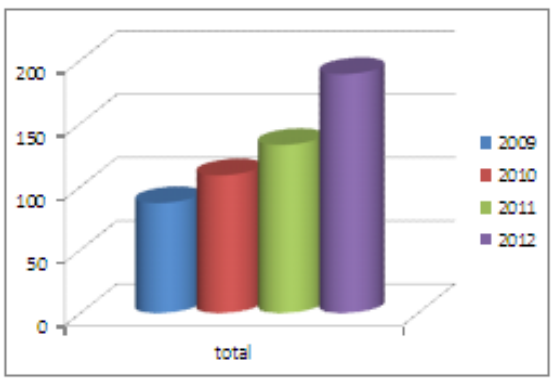

Fig 1. Distribution of rheumatoid arthritis in patients attending (KKHH) region, Saudi Arabia during the year 2009- 2012.

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Females were found to be commonly affected than males and their ages were mainly over 35 years with negative family history.

Table (2): Sex distribution as a human factor contributing to rheumatoid arthritis in patients attending King Khalid Hospital-Hail region, Saudi Arabia during the year 2009- 2012:

Sex	2009	2010	2011	2012
Males	7 (8 %)	10 (9.2%)	12 (9%)	8 (4.2%)
Females	80 (92 %)	99 (90.8%)	121 (91%)	181 (95.8%)
Total	87	109	133	189

The majority of patients experienced an insidious onset with intermittent course. The commonest extra-articular manifestation was ophthalmological manifestations; while the main associated diseases were vitamin D deficiency, hypertension, diabetes mellitus and hypothyroidism. The main manifestations were arthritis, morning stiffness and fatigue. The most sensitive test in diagnosis of RA was the (anti-CCPAB).

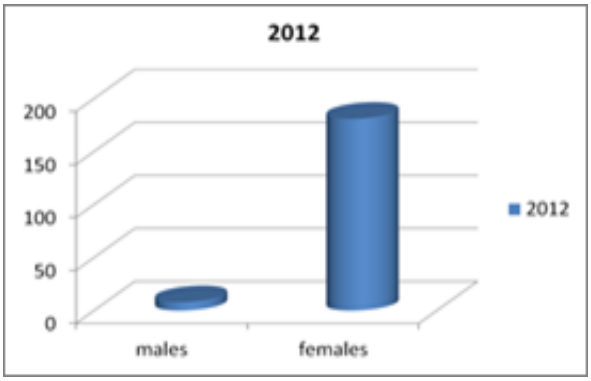

Fig.2 sex distribution as a human factor Contributing to rheumatoid arthritis in Patients attending (KKHH) region, Saudi Arabia during the year 2012.

Additionally, it was also noticed in the current work that the most commonly affected joints were PIJ (proximal interphalangeal joints), knee joints, MCP (metacarpophalayngeal joints), wrists and elbows.

Discussion

Rheumatoid arthritis has a global distribution with an epidemiological ratio of 1-3 %. However, data about RA among Arab is very deficient (Gibofsky, 2012).

Even though the onset of RA can affect any age, patients in fourth and fifth decades were highly affected (Hanan, 2103). Similarly, the present study as well as most of the studies around the world confirmed that more than half of the cases had an onset at 30-50 years of age which is parallel to the pattern noticed in other areas of the world (De Hair et al , 2012). It was reported that the age of onset correlates with the age distribution of the community and the lifespan of Saudis is increasing. Moreover, the female prevalence observed in the current study is similar to that noticed in Iraq, Oman, most African and Asian reports (Al-Rawi et al 1978), (Pountain, 1991), (Vasishta, 2002), (Arnett. 1998).

Although RA is a progressive disease with continuous worsening of the joint functions, most of the RA patients have periods of remission between their relapse (Gibofsk, 2012). Likewise, it was reported in the current study that most of the patients (82.8%) experienced an intermittent course. The pattern in this report was similar to most of the patients from developed countries than those from developing countries (Wood & Badley1986), (Mohamed, 2010), (Al-Rawi, 1978).

Table (3): Genetic factor contributing to rheumatoid arthritis in patients attending King Khalid Hospital-Hail region, Saudi Arabia during the year 2009- 2012:

Genetic factor	2009	2010	2011	2012
+ve family history	11 (12.6%)	10 (9.1%)	15 (11.3%)	17 (9%)
-ve family history	76 (87.4%)	99 (89.9%)	118 (88.7%)	172 (91%)
Total **	87	109	133	189

Patient with positive family history for RA in the current study were presented with a considerable number (12.6%). Other studies further supported ours as they proved a link between HLA-type and RA in different nations. (Hanan, 2103) (Vasishta A, 2002).

Almost all of our patients were reported to have arthritis and were complaining of morning stiffness as well. A similar high frequencies have also been reported in many studies in developing countries. (Hanan, 2013), (Vasishta, 2002) (Adepajo1991), (Al-Rawi,Z.S). Additionally, it was also noticed in the current work that the most commonly involved joints were PIJ (proximal interphalangeal joints),

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knee joints, MCP (metacarpophalayngeal joints), wrist and elbows, The dominant pattern of joint involvement observed in our study is similar to that obtained in Iraqis (Al-Rawi 1979), UK's and Kenyans (Bagg, L.R1979). However, the knees are involved in a higher proportion in our patients and Kenyans than in the Caucasian (Bagg, L.R1979) and Iraqi (Al-Rawi 1979) series. Such variations in joint involvement in other community have been proved to have relations to the differences in joint use (Cimmino MA2000). Moreover, exaggerated flexion of the knees during daily activity is frequent in our cases.

Table (4): Onset of rheumatoid arthritis disease among patients attending King Khalid Hospital -Hail region, Saudi Arabia during the year 2009- 2012

Onset	2009	2010	2011	2012
Sudden (Over a few days)	18 (20.6 %)	20 (18.3%)	26 (34.5%)	29 (15.3 %)
Insidious (over weeks months)	69 (79.4%)	89 (91.7 %)	107 (65.5 %)	160 (84.7%)
Total	87	109	133	189

Rheumatoid nodules in our study were found to be within the range of 8.8%, which is similar to that of West African (9%). However, a higher rate was observed in Kenyans (31.6%) (Bagg, L.R1979), British (19%) (Adepajo, A.O1991), and Australian (20%) (American College of Rheumatology 2002).

The main associated diseases with RA in the current work were vitamin D deficiency, hypertension, diabetes mellitus and hypothyroidism. There are many studies linking RA with the early occurrence of hypertension and cardiac disease (Manavathongchai et al. 2013) (Liang, 2013). This was explained on the basis that inflammatory burden in RA, always predispose to the early atherosclerosis in patients with this condition. Moreover, increased levels of inflammatory substances predispose to cause insulin resistance with the result of type 1 diabetes mellitus (Büchel et al, 2013). It was reported that the development of DM in women was anticipated by high levels of (CRP) and interleukin 6 as markers of systemic inflammation (Pradhan al 2007). Other researchers discovered that markers of inflammation such as CRP and elevated white cell count were also associated with development of diabetes on the long run (Güven t al, 2013).

Moreover, the role of insulin resistance in patients with inflammatory arthritis has been studied and disturbed glucose handling in sera of RA patients have been found (Cimmino MA2000). Most of patients in the present study were found to have vitamin D deficiency. This is expected since it has been found that this kind of vitamin deficiency is very common among Saudi population. Serum vitamin D levels have been found to have inverse relation with the RA activity.

Furthermore, supplements of vitamin D was accompanied by decreasing risk of RA and marked clinical recovery (Atwa et al 2013).

Table (5): Laboratory diagnosis of rheumatoid arthritis in patients attending in King Khalid Hospital-Hail region, Saudi Arabia during the year 2009- 2012:

Lab analysis	2009	2010	2011	2012
ESR	80 (91.0%)	97 (88.9%)	120 (90.2%)	173 (91.5%)
CRP	83 (95.4%)	95 (87.1%)	121 (91%)	170 (89.9%)
Latex test	55 (63.2%)	70 (64.2%)	95 (71.4%)	122 (64.6%)
Anemia (HB level)	51 (58.6%)	57 (52.3%)	91 (68.4%)	111 (78.7%)
anti-CCP AB	86 (98.9%)	107 (98.1%)	131 (9%)	185 (97.9%)
Total **	87	109	133	189

About 70.1% of the patients in the current study didn't have extra-articular manifestations. Similar results were recorded in Kuwait (Al-Salem et al, 2004) with the same clinical features and less extraarticular features. On the other hands, Western countries were found to have more extra-articular features (Helmick et al 2008).

In the current study, our patients were found to have a high percentage of ophthalmological manifestations which is Similar to Italian (23%) (Cimmino MA2000) and Iraqis (11.3%) (Al-Rawi 1979). However, it was opposite to the rate of 4% noticed in British patients (Zlatanović et al, 2010). In addition, the rate of carpal tunnel syndrome (1.5%) was parallel to what has been found in the Chinese

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(2%) (American College of Rheumatology, 2002) and Iraqi (2%) (Al-Rawi 1979) but lower than that reported in Australian patients (22%) (American College of Rheumatology 2002).

Since ESR and CRP and Latex tests are commonly present in any case of active inflammation and systemic autoimmune diseases, they are not accurate. The frequency of patients with a positive RF in the present study was (63.2% -71.4 %) which is lower than that found in Kenyan (83%) (Bagg, L. R1979), and UK patients (88%) (Bagg, L. R1979). However, lower ratios were reported among Kuwaiti (40%) (Bushra M2008) and Omani patients (57.1%) (Pountain, 1991). This paradoxical result can be explained on the basis of different sensitivities of chemical laboratory kits, and the differences in race and genetic components of the blood.

Fortunately, a new test for detection of autoantibodies against RA is recently developed. It depends on citrulline antibody and referred to as (anti-CCP) and it is present in the sere of most of the cases with RA. It was found very efficient in the diagnosis of RA, especially in the early stage of the disease in our patients. Moreover, blood testing in the current work revealed that more than half of our patients were having anemia which is expected since anemia is common in RA, (Kirdaite et al, 2003).

It should be addressed in the present study that the most of our patients were sent from other health centers or orthopedic doctors very late. This is absolutely due to lack of awareness by the importance of early detection. The bulk of cases in the current work who had late diagnosis were found to seek medical advice very. This will reorient attention of the community to the urgent need for early detection of RA to limit the dangerous complications.

Table (6): Associated diseases with rheumatoid arthritis in patients attending King Khalid Hospital-Hail region, Saudi Arabia during the year 2009- 2012

Associated diseases	2009	2010	2011	2012
Hypertension	22 (25.3%)	20 (18.3%)	31 (23.3%)	29 (15.3 %)
heart disease	4 (4.6%)	5 (4.6%)	9 (6.8%)	10 (5.3%)
Diabetes mellitus	20 (22.9%)	25 (22.9%)	26 (19.5%)	54 (28.6%)
Hypothyroids	18 (20.7 %%)	20 (18.3%)	33 (24.8%)	44 (23.3%)
COPD	2 (2.3%)	5 (4.6%)	5 (3.8%)	8 (4.2%)
Rheumatic heart disease	3 (3.4%)	7 (6.4%)	10 (7.5%)	9 (4.8 %)
Osteoarthritis	15 (17.2%)	20 (18.3%)	36 (27.1%)	60 (32%)
Vitamin D deficiency	(82%)	(88%)	(79%)	(90%)
No associated diseases	55 (63.2%)	29 (26.6%)	33 (24.8%)	40 (21.1%)
Total	87	109	133	189

Conclusion

The current study highlighted the pattern of rheumatoid disease. The demographic features were similar to those reported by others. Females were found to be commonly affected than males and their ages were mainly over 35 years with negative family history. The majority of patients experienced an insidious onset with intermittent course. The commonest extra-articular manifestation was ophthalmological manifestations, while the main associated diseases were hypertension, diabetes mellitus and hypothyroidism. The main systemic manifestations were predominantly arthritis, morning stiffness and fatigue.

Limitation of the study

1. Although the study may reveal the pattern of RA disease in patients attended KKHH, it cannot be considered comprehensive for the whole Hail population.
2. The prevalence of RA was not done in the current work due to specific kind of sample of patients suffering from RA.

Recommendations

1. There is a need for a more inclusive study to determine the prevalence of RA among the whole Hail community. A countrywide study for KSA is needed as well.

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2. A nationwide program for RA is needed to increase the awareness of Saudi population about the importance of early diagnosis of RA which will help greatly the rheumatoid patients.

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