Characteristics of Egyptian Rheumatoid Arthritis Patients — A Hospital-Based Study

Thesis
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List of Abbreviations

- **ACR** American College of Rheumatology
- **ALT** Alanine transaminase
- **Anti–CCP** Anti-Cyclic citrullinated peptide
- **ARA** American Rheumatism Association
- **AST** Aspartate transaminase
- **BMD** Bone mineral density
- **BO** Bronchiolitis obliterans
- **CBC** Complete blood picture
- **CD** Cluster of differentiation
- **CDAI** Clinical Disease Activity Index
- **COP** Cryptogenic organizing pneumonia
- **CRP** C-reactive protein
- **CT** Computed tomography
- **DAS** Disease activity score
- **DIP** Distal interphalangeal
- **DMARDs** Disease-modifying antirheumatic drugs
- **EAMs** Extra-articular manifestations
- **ESR** Erythrocyte sedimentation rate
- **GN** Glomerulonephritis
- **HAQ** Health Assessment Questionnaire
- **HAQ-A** Arabic Health Assessment Questionnaire
- **HBV** Hepatitis B virus
- **HCT** Hematocrit
- **HCV** Hepatitis C virus
- **HLA** Human leukocyte antigens
- **IFN** interferon
- **IL** Interleukin
- **ILD** Interstitial lung disease
- **JSN** Joint space narrowing
- **KCS** Keratconjunctivitis sicca
- **MCP** Metacarpophalangeal

- **MDGA** Physician (MDGA) global assessment
- **MRI** Magnetic resonance imaging
- **MTP** Metatarsophalangeal
- **MTX** Methotrexate
- **NSAIDs** Nonsteroidal antiinflammatory drugs
- **OT** Occupational therapy
- **PAN** Polyarteritis nodosa
- **PGA** Patient global assessment
- **PHQ-9** Patient Health Questionnaire-9
- **PIP** Proximal interphalangeal
- **RA** Rheumatoid arthritis
- **RADAI** Rheumatoid arthritis disease activity index
- **RANKL** Receptor activator of nuclear factor κB ligand
- **RASFs** Rheumatoid arthritis synovial fibroblasts
- **RF** Rheumatoid factor
- **SCN** Subcutaneous nodules
- **SDAI** Simplified Disease Activity Index
- **SENS** Simplified Erosion and Narrowing Score
- **SJC** swollen joint count
- **Th** T Helper
- **TJC** Tender joint count
- **TMJ** Tempromandibular joint
- **TNF** Tumor necrosis factor
- **VAS** Visual analog scale

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Introduction

Rheumatoid arthritis (RA) is a chronic systemic inflammatory disease of unknown etiology that primarily targets synovial tissues. It is relatively common with a prevalence of approximately 1% in adults all over the world. Ra shortens survival and significantly impacts on quality of life in most affected patients ***(O'Dell, 2004).***

Although RA is properly considered a disease of the joints, it is important to recognize that it can exhibit a variety of extra-articular manifestations (EAMs) ***(Firestein, 2005)***. EAMs include vasculitis, serositis, pneumonitis, lymphadenopathy, splenomegaly and leucopenia ***(Sack and Fye, 2001).***

Several studies have shown a less severe disease with less EAMS in Mediterranean countries than in other geographic areas ***(Kalouche-Khalil et al., 2006).***

Many reports on the differences in the prevalence of rheumatoid arthritis (RA) in the world have been published, and evidence provided to show that the clinical expression and outcome may vary between populations ***(Carmona et al., 2003).***

In Egypt, there is no reliable data on its characteristics and severity. Since differences in the clinical features induce different practice guidelines, it is necessary to assess our population.

Aim of the Work

To determine the main characteristics of Egyptian rheumatoid arthritis patients attending Ain Shams University Hospital as regard:

- Disease activity
- Extra-articular manifestations (EAMs)
- Sociodemographic characteristics
- Quality of life

Introduction to Rheumatoid Arthritis

Rheumatoid arthritis (RA) is a heterogeneous disease of unknown cause ***(van der Pouw Kraan et al; 2007)***, disputed origin, and variable clinical presentations ***(van Riel; 2002)***. Its prevalence and incidence vary from one population to another and from time to time ***(Guillemin et al; 2005)***. In individual patients, it takes a variable course with remissions and exacerbations, and has a variable outcome, from a remitting disease leaving no damage to a severe disease bringing disability and even death ***(Manfredsdottir et al; 2006)*.** Though a number of agents have proved useful in treating the disease, cure is elusive, and individual response to treatment is also variable ***(Anderson et al; 2000)***. Because of this variation, RA was justifiably described as one of modern medicine's major enigmas ***(Scrivo et al., 2007)***.

Rheumatoid arthritis (RA) is a chronic, disabling disease with considerable impact on patients' lives, on their families and on society as a whole ***(Carmona et al; 2003)***. It is an inflammatory systemic disease mainly affecting joints. Frequent extra-articular manifestations are often recognized too late. Extra-articular manifestations affect the skin, the cardiovascular system, the kidneys, the eyes, the gastrointestinal tract, the liver, the nervous system and the blood ***(Sakini et al; 2005)***.

Historical Evidence for Rheumatoid Arthritis

The term rheumatoid arthritis was coined by Garrod in 1859 ***(Garrod, 1859)***. However, the term originally included not only seronegative arthritis but polyarticular osteoarthritis as well ***(Halberg, 1994)***. Many researchers agree that RA is a new disease in the Old World, because no evidence for its existence was found in Europe, Asia, or Africa before the

17th century. RA may have originated in the New World thousands of years ago, and like syphilis, crossed the Atlantic Ocean several years after Columbus discovered America in 1492 ***(Rothschild et al., 1992)***.

This hypothesis is not only of historical interest, but also of epidemiological interest because it raises the possibility of an environmental (infectious) factor in the cause of RA ***(Halberg, 1994)***. The mostly negative evidence for the novelty of RA is derived from medical and nonmedical literature, figurative art, paleopathology, and epidemiological studies of the occurrence and trends of RA.

Literature

In medical literature, the first entirely convincing description of RA was published by Landré-Beauvais in 1800 ***(Landré-Beauvais, 1800)***, who called it "La Goutte Primitive Asthenique." Whereas gout was primarily an affliction of robust and wealthy men, this new type of gout affected women predominantly and was characterized by polyarticular onset and asthenia. Earlier medical literature, though full of descriptions of other arthritides, is noticeably lacking in descriptions of RA ***(Buchanan, 1994)***.

Medical museums do not contain specimens of RA that predate that description, although they do contain much early material relating to other types of arthritis ***(Buchanan, 1994)***. In nonmedical literature, there is no mention of RA in the Bible or the works of Shakespeare ***(Buchanan, 1994)***, and most literary descriptions of arthritis before 1800 suggest gout. The only exception is that of Madame de Sévigné (died 1696), who described her own joint disorder in her letters, a description that satisfies the American Rheumatism Association (ARA) criteria for RA ***(Tamisier et al., 1987)***.

Figurative Art

Evidence of RA has been found in Flemish and Dutch paintings; mainly from the 17th century. There are examples in the works of Rubens (1577-1640), who may have suffered from the disease himself ***(Appelboom, 2005)***.

The housemaid in "The Painter's Family" by Jacob Jordaens (1593-1678) has swellings of the metacarpophalangeal and proximal interphalangeal joints. The hand of Siebrandus Sixtius, a Dutch priest painted in 1631, shows swellings and ulnar deviation ***(Dequeker, 1992)***.

However, art historians warn against over interpreting works of art, which are not scientific illustrations and therefore are subject to artistic conventions and individual interpretations ***(Philippot, 1987).*** Works of art can be conclusive, however, if the patient's history also is known ***(Buchanan, 1994)***.

In Africa, there is no evidence of RA before the 20th century. The medical diseases affecting ancient Egyptians as reflected in their drawings have been well described ***(Ghalioungui and El-Dawakhly, 1965)*** but do not include RA. Sub-Saharan Africa has so far yielded no early drawings or figurines depicting the disease, nor is it mentioned in indigenous histories ***(Adebajo, 1991)***.

Figure (1): Painting by Jacob Jordaens (1593-1678), entitled The Painter's Family, *Rheumatology, Third Edition.*

Paleopathology

Paleopathology, a term introduced by Sir Marc Armand Ruffer, Professor of Bacteriology at the Cairo Medical School at the turn of the century, is the study of disease in human populations as revealed by their mummified and skeletal remains ***(Ruffer, 1913)***. Though spondylitis, gout, osteoarthritis, and even ochronosis could be identified in skeletons and Egyptian mummies up to 4,000 years old, unequivocal evidence of RA has not been found in material before the 18th century ***(Buchanan, 1994)***.

Recently, however, it was hypothesized that RA originated around 4000 BC in the New World, based on findings in skeletons of Indians living in Alabama between 4500 and

450 BC which have shown traces of rheumatoid arthritis ***(Appelboom and Halberg, 2003).***

The hypothesis that RA originated in North America is also supported by the absence of RA in more than 25,000 European, African, and Middle Eastern skeletons ***(Aceves-Avila et al., 2001)***.

Epidemiology

Rheumatoid arthritis is a fascinating disease with a complex epidemiology. RA is the most common chronic inflammatory joint disease, affecting 0.5-1% of the population; and according to the World Health Organization (WHO); worldwide prevalence was estimated at more than 20 million people ***(Sheehy et al., 2006)*** with an annual incidence of 25-50/100 000 ***(Söderlin et al., 2002)***.

These figures, however, are derived from studies of white populations in the United States and Western Europe; generally, these rates hold true in most populations, but there are some notable exceptions. Lower rates have been seen in China, Japan, northwest Greece, and rural Africa. In these groups, occurrences of rheumatoid arthritis have been shown to be 0.2 to 0.3% ***(Ferruci et al., 2005)***. Higher rates have been seen in several American Indian and Alaska native populations ***(Silman and Hochberg, 2001)***.

Other studies have indicated a decrease in the incidence of RA over time and a shift toward a higher mean age at onset ***(Doran et al., 2002)***. It has been suggested that time trends in incidence could be due to different susceptibility to RA in certain birth cohorts ***(Silman, 2002)***.