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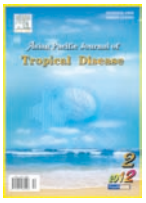

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Prevalence of autoantibodies among patients presented to Sultan Qaboos University hospital (SQUH)

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ABSTRACT

Objective: The aim of this study was to estimate the prevalence of autoantibodies among patients presented to Sultan Qaboos University Hospital (SQUH).**Materials:** various clinics in SQUH during the period from Jun 2009 to Jun 2011, from patients who were suspected of having autoimmune related disorders. Tests for antinuclear, anti-n-DNA, anti-neutrophil cytoplasmic, anti-islet cell, anti-skin, anti-gastric parietal cell, anti-glomerular basement membrane, anti-reticulin mitochondrial antibodies were performed by the use of indirect immunefluorescence assays on various substrates. ELISA techniques were used to measure anticardiolipin and anti-ENA antibodies. Antibodies to extractable nuclear antigens were also measured by the use of latex agglutination, while anti-thyroid antibodies (ATA & ATMA) were measured by haemagglutination assays.**Results:** The ages of the patients ranged from >1 year to 85 years. The major number of tests wasrequested by Rheumatology department. In general the majority of patients were female (67%) and among that, Omani nationals constituted 42% of all female patients. A prevalence of autoantibodies of 31% was found and 74% of that was found in Oman patients. **Conclusion:** The low percentage of positive samplesdoes not necessarily reflect the true ofautoantibodies but is simply due to over requesting of tests.

1. Introduction

Autoantibodies can be present in sera of patients with or without autoimmune diseases [14, 15]. The literature clearly defines their role in specific autoimmune conditions. Their presence merely supports, not confirms the diagnosis of an autoimmune disease; for a clinical diagnosis, evidence for clinical disease and/or tissue damage should be present. The definition of abnormality related to autoantibody levels is usually based on abnormal quantity rather than affinity or avidity. Thus, abnormal autoantibody levels can result in clinical or sub-clinical autoimmune conditions. The demonstration and interpretation of autoantibodies in sera from patients is a diagnostic tool in autoimmune diseases. Thus, the availability of data on the frequency and strength of autoantibodies within a normal population is important for determination of diagnostic levels [14].

Collectively autoimmune diseases can generally be classified into two groups [4]. Those that are systemic in nature with varieties of autoantibodies which are highly specific for certain diseases, including anti-dsDNA, anti-Sm, anti-ribosomal P autoantibodies in SLE [5], anti-topoisomerase I (Scl-70) in scleroderma [6], anti-CCP in rheumatoid arthritis [7], anti-SS-A/Ro, anti-SS-B/La in Sjögren's syndrome (SjS) [8], anti-U1-RNP, anti-PM-Scl in mixed connective tissue disease (MCTD) or anti-Jo-1 in polymyositis or dermatomyositis. The second group is those that are more organs or tissue directed which are associated with autoantibodies specific to the main affected organ, like thyroglobulin (TGA) [9], and thyroid peroxidase enzyme (TPO) in thyroiditis [10], insulin and glutamic acid decarboxilase autoantibodies in T1D[12, 13],and anti-mitochondrial autoantibody in primary billiary cirrhosis. However, the detection of such autoantibodies may reflect a status of disease activity or at least predict a future pathogenic condition.However, each of these groups presents unique problems to the diagnostic laboratory and being complicated further by the fact that they may occur in combination with each other. And this in return will reflect that the autoimmunity laboratories should analyze and measure an increasing number of autoantibodies employing a broad spectrum of techniques and methods [16]. On the other hand it has been clearly shown that autoantibodies

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that are associated with autoimmune diseases not only play a significant role as diagnostic markers, but that their occurrence may also be used to make a well-founded prediction. For example, in the past, when autoantibodies were found to be in a patient who apparently showed no signs of disease, this was generally assumed to be a false positive result at that time. However, thanks to some imposingly splendid studies done at that time which has been stored for documentation purposes, it is well known now that autoantibodies can occur 10 to 20 years before the outbreak of autoimmune disease, and in some cases even earlier. The most striking example of this is with primary biliary cirrhosis, where the typical anti-mitochondrial antibodies (AMA) may be identified more than 30 years before the occurrence of the first symptoms. For example Anti-dsDNA antibodies may precede the development of SLE by 5 to 10 years[16].

In this study, we look into the prevalence of autoantibodies in patients who presented with autoimmune related disordersto the Sultan Qaboos University Hospital (SQUH).

2. Materials & Methods

Records of 10290 new patients who attended different clinics including dermatology, haematology, rheumatology, endocrinology, gynecology, children words, gastroenterology and other OPD between June 2009 and June 2010 were analysed retrospectively for the presence of several autoantibodies and coexistence of autoimmune disorders as per history and examination. Patients were categorised according to age, sex, and race, presence of associated autoimmune disorders.

Selected autoantibody tests were carried out on 10290 samples at the Immunology Diagnostic Laboratory over a period of 12 months. Sera were from patients of various age groups with symptoms of autoimmune related disorder.

3. Result

The ages of the patients ranged from less than a year to 85 years and detailed correlations between age groups and results were performed and found 67% were female (Figure 1). Among that, Omani nationals were found to constitute 42% of all female patients. The overall finding was based on the number of positive results amongst the total request i.e., however, in general the overall positive samples were found to be 31% of all samples submitted for analysis.

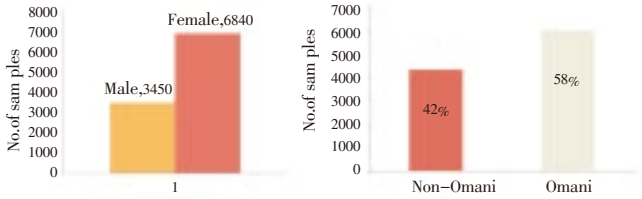

Figure 1. The histograms showed the proportion of patients based on a) sex and b) ethical race. Percentage i.e., 58% represents the total number of samples from Omani patients presented to the SQUH in comparison to that of non-Omani patients (42%).

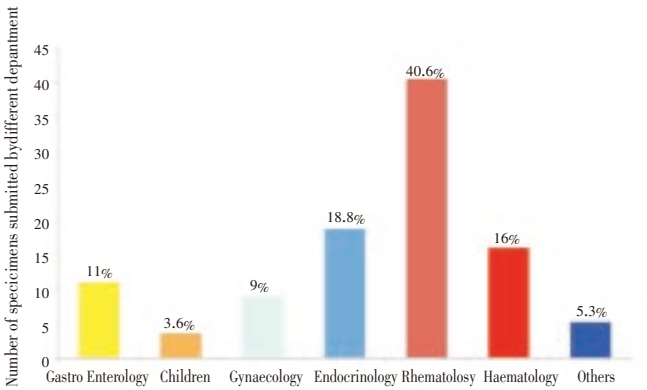

Figure 2. The histograms showed the proportion of the number of specimens submitted to SQUH immunology diagnostic laboratory by different department.

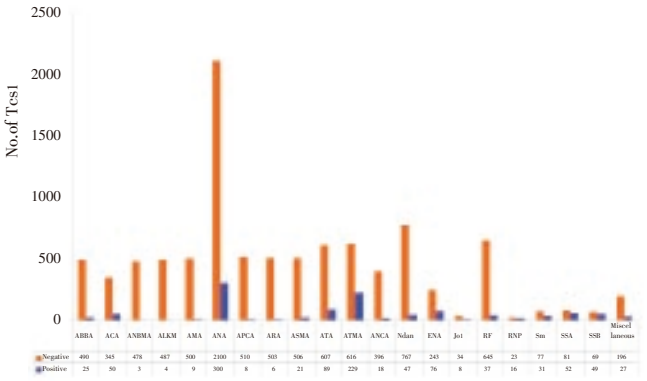

Figure 3. Histogram illustrates the outcome of the number of different autoantibody assays performed. Numbers represent the overall positiveand negative results for each individual test.

Requested Test	Technique Used
Anti n-DNA Antibodies	IIF (Crithidialucilliae) & ELISA
Anti Cardiolipin	ELISA (IgG&IgM)
Anti Neutrophil Cytoplasmic Antibodies	IIF (Fixed Human Neutrophils)
Anti Gastric Parietile Cell Antibodies	IIF (LKS Sections)
Anti Recticulin Antibodies	IIF (LKS sections)
Anti Nuclear	IIF (Hep-2 Cells)
Anti ENA	CCD & ELISA
Anti Ro (SS-A)	CCD & ELISA
Anti La (SS-B)	CCD & ELISA
Anti Mitochondrial Antibodies Smooth Muscle	IIF (LKS sections)
Antibodies	CCD & ELISA
Anti RNP	CCD & ELISA
Anti Sm	CCD & ELISA
Anti Scl-70	IIF (LKS sections)
Anti Liver Kidney Microsomal Antibodies Others (Miscellaneous)	Various

This study also demonstrated the distribution of requirements for these tests, among the various clinics within the SQUH with the major number of tests being requested by Rheumatology. The results as illustrated in figures 2 and 3 represent the analysis according to different criteria.The tests requested by various departments were

1673(16%) test from Hematology, 4181(40.6%) test from Rheumatology, 1933 (18.8%) from Endocrinology, 662 (6.4%) from Gynecology, 368 (3.6%) from children words, 928 (9%) from Gastroenterology and 545 (5.3%) from other categories such as Psychiatrics and Dermatology (Figure 2). However, the rate of the positive samples from the Omani patients who presented to the SQUH was about three times less (26%) than non Omani patients (74%) (Figure 3).

4. Discussion

When the immune system's recognition apparatus breaks down, the body begins to produce antibodies and T cells directed against the body's own constituents-cells, cell components, or specific organs [1]. These antibodies are known as autoantibodies. Autoantibodies react with self-antigens that may be found in all cell types (e.g. chromatin, centromeres) or be highly specific for a specific cell type in one organ of the body (e.g. thyroglobulin in cells of the thyroid gland). They may comprise proteins, nucleic acids, carbohydrates, lipids or various combinations of these [2]. Autoantibodies may be the actual pathogenetic agents of autoimmune disease, the secondary consequences of tissue damage, or the harmless footprints of an etiologic agent [3].

In this study, we look into the prevalence of autoantibodies in Omani and non-Omani patients who presented with autoimmune related disordersto the Sultan Qaboos University Hospital (SQUH). Between the periods of 2009 to 2010, the Immunology Diagnostic Laboratory at SQUH Carried out a total of 10376 selected autoantibodies tests from patients who were suspected of suffering from some form of autoimmune related disorder. The number of requests according to the clinical details included with the forms was as follows; the tests requested by various departments were found to be 1673(16%) test from Hematology, 4181(40.6%) test from Rheumatology, 1933 (18.8%) from Endocrinology, 662 (6.4%) from Gynecology, 368 (3.6%) from children words, 928 (9%) from Gastroenterology and 545 (5.3%) from other categories such as Psychiatrics and Dermatology as shown in Figure 2. The ages of the patients ranged from less than a year to 85 years and detailed correlations between age groups and sex female (67%) (Figure 1) and among that, Omani nationals constituted 42% of all female patients. However, the positive rate with Omani patients who presented to the SQUH was about three times less (26%) than non-Omani patients (74%) (Figure 3).

The patients' ages ranged from less than a year to 85 years and detailed correlations between age groups and results were performed were 67% female and among that, Omani nationals constituted 42% of all female patients. The overall finding was based on the number of positive results amongst the total request i.e., from the results that we obtained we can estimate that only 30% of the total tests requested were positive.However, the fact that it is very hard to estimate the age group that constitutes the major fraction among the number of specimens tested and the positive results obtained. If we can then it may probably reflect the high proportion of that age group among the Omani population. Furthermore, the low percentage of positive findings among different groups of patients could not necessarily reflect the true prevalence of autoantibodies in but are simply due to over requesting by clinicians (figure 3). Another finding is that as this study outlines the prevalence of autoantibodies in patients suspected of having autoimmune disorders in Oman, the results obtained from the present study emphasized the need for requesting the "screening test" such as ANA and RF, prior to the more specific tests such as ENA and DNA.

In conclusion this retrospective study showed that the results that we have obtained demonstrated that a general correlation between ethical race and test positivity were observed, however, but not between the age, sex as more work has to be established in this sector.

Conflict of interest statement

We declare that we have no conflict of interest.

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