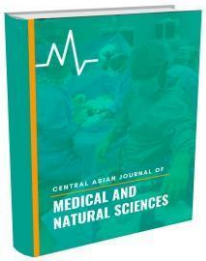

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Article

Exploring the Intersection of Autoimmune Disorders and Women's Health: A Cross-Sectional Study of Gynecological and Systemic Manifestations

Jenan Jawad Mahdi Al-Awadi*[1]

1. Iraqi Ministry of Health, Diwaniyah Health Directorate, Al-Diwaniyah Teaching Hospital, Diwaniyah, Iraq.
* Correspondence: jinanjwad5@gmail.com

Abstract: As far as women are concerned, autoimmune disorders pose an important threat to their health, with both gynecological and systemic manifestations. To examine autoimmune disorders, treatment modalities, and post-treatment outcomes in females with autoimmune disorders. Gynecological and systemic manifestations that occur during a 12-month follow-up are of interest. One hundred five female patients diagnosed with different autoimmune disorders were included in this cross-sectional study conducted in Al-Diwaniyah, Iraq, from April 2023 to April 2024. Baseline data were collected on various clinical characteristics, types of autoimmune diseases, and treatment modalities employed to treat the patients. Assessment of symptoms and quality of life was done for all patients through standardized questionnaires at baseline and at 1, 3, 7, and 12 months following treatment. Most of the cohort were women aged 20-40 years (52.4%), with the mean BMI being 24.5 ± 3.2 kg/m². Hypertension and asthma stood foremost among the comorbidities, being 23.8% and 17.1% prevalent, respectively. Of autoimmune disorders, the most common ones were rheumatoid arthritis, 43 (40.95), and lupus, 20 (19.0). Among gynecological symptoms were more irregular menstrual cycles (47.6%), whereas fatigue (66.7%) was the common systemic symptom. Response to treatment at 12 months yielded the most significant reduction in symptoms and improvement in quality of life. This study articulates the severe effects that autoimmune disorders pose on systemic and gynecological health in women. In this case, timely diagnosis and directed therapy lead to better outcomes and improved quality of life.

Keywords: Autoimmune Disorders, Women's Health, Gynecological Symptoms, Systemic Symptoms, Quality of Life, Treatment Outcomes, Risk Factors

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1. Introduction

Autoimmunity represents the alterations in response due to an abnormal immune response by which the immune system of the body mistakenly attacks and destroys its own tissue [1]. In the recent past, autoimmune diseases have been given serious thought due to their complex pathology and grievous health implications, especially for women [2]. Epidemiological evidence suggests that women suffer disproportionately from autoimmune diseases and that many of these diseases show a female-to-male ratio of 2:1 or greater [3,4]. This strong gender imbalance opens questions not only concerning the mechanisms behind it from a biological standpoint but also concerning the repercussions on women's health, more so for their gynecologic manifestations and systemic manifestations [5]. Perhaps the most revealing facet of autoimmune disorders is the wide range of clinical manifestations and presentations [6]. Each autoimmune disease is capable

of presenting symptoms that may be systemic, involving a variety of organs, but at the same time, the manifestations might be specific to female reproductive and gynecological health [7,8]. Common illnesses such as systemic lupus erythematosus, rheumatoid arthritis, and Hashimoto's disease can affect menstruation, fertility, and pregnancy outcomes [9]. The plants have also been implicated through studies in gynecological disorders, which include irregularities in menstruation, the development of polycystic ovarian syndrome, and poor pregnancy outcomes, thereby compounding the situation for afflicted women [10,11,12].

2. Material and Methods

I. Study Design

The method of this study embraced a cross-sectional study to investigate the relation between autoimmune disorders and their gynecological or systemic manifestations among women. A longitudinal follow-up study is carried out to assess changes that include symptomatology and treatment outcomes gradually over a period of 12 months. The research was carried out in a clinical setting, wherein both qualitative and quantitative approaches were used to gain comprehensive information about the medical ailments of the participants, treatment modalities, and health-related quality of life.

II. Participants and Data Collection

- Recruitment

  Participants were recruited from rheumatology, endocrinology, and gynecology inpatient wards in Al-Diwaniyah, Iraq hospitals from April 2023 - April 2024. Participants were recruited by using convenience sampling from females aged 19 to 47 who are diagnosed with any autoimmune disease.
- Inclusion Criteria
  - Females aged 19 to 47 years.
  - A diagnosis of an autoimmune disorder, as confirmed by a medical practitioner. Disorders may be any of systemic lupus erythematosus, rheumatoid arthritis, Hashimoto's thyroiditis, lupus erythematosus, and multiple sclerosis.
- Exclusion Criteria
  - Secondary autoimmune disorder that will complicate the evaluation of primary symptoms.
  - Severe psychiatric disorders that will impair the ability to participate (severe depression and schizophrenia).
  - Pregnancy at entry or planned conception in the coming 12 months, since this can affect gynecologic and systemic outcomes.
  - Recent use of immunosuppressive therapy that may skew the symptom evaluation.

III. Treatment Management

At enrollment, participants were categorized based on their diagnosed autoimmune disease, prior treatments, and current management modalities. Data on treatment regimens collected, including medication types (corticosteroids, biologics, and DMARDs), doses, treatment duration, and any other supportive therapies (e.g., physiotherapy, dietary supplements). Participants also underwent a comprehensive baseline assessment with clinical evaluations and laboratory tests as relevant.

IV. Assessment Questionnaires

To completely evaluate the impact of autoimmune diseases on the lives of participants, a number of validated instruments will be utilized:

1. Health Assessment Questionnaire (HAQ): This measured functional disability and health status regarding autoimmune diseases.

2. Short Form Health Survey (SF-36): SF-36 assessed general health-related quality of life across eight dimensions, and both physical and mental health outcomes could be measured.

V. Data Analysis

Results were processed using statistical software, such as SPSS version 22.0, to calculate correlations and significant findings between autoimmune disorders, gynecological symptoms, and quality of life indicators. Descriptive statistics (mean, standard deviation) were applied in summarizing clinical and demographic information, while inferential statistics (e.g., regression analysis) will be applied in estimating correlations.

3. Results

The first table summarizes the basic demographic characteristics of the patients included in the study, along with key clinical information such as age, body mass index (BMI), comorbidities, and smoking status. This data provides important context for understanding the patient population and potential correlations with autoimmune diseases.

Table 1. Basics and Demographic Characteristics.

Characteristic	Category	n (%)
Age Group, Years	<20	10 (9.5)
	20-40	55 (52.4)
	>40	40 (38.1)
BMI (KG/M²)	Mean ± SD	24.5 ± 3.2
Smoking Status	Yes	20 (19.0)
	No	85 (81.0)
Number of Comorbidities	Yes	60 (57.1)
	No	45 (42.9)
- Hypertension	Yes	25 (23.8)
	No	80 (76.2)
- Diabetes	Yes	15 (14.3)
	No	90 (85.7)
- Anemia	Yes	35 (33.3)
	No	70 (66.7)
- Asthma	Yes	18 (17.1)
	No	87 (82.9)
- Osteoporosis	Yes	10 (9.5)
	No	95 (90.5)
Marital Status	Single	30 (28.6)
	Married	45 (42.9)
	Divorced	15 (14.3)
	Widow	15 (14.3)
Occupation Status	Employed	60 (57.1)
	Non-employed	45 (42.9)

In this table, laboratory test results are presented, highlighting the key biochemical markers such as blood glucose levels, cholesterol, and thyroid function tests. This is crucial

for understanding the underlying physiological conditions in the cohort and how they might interact with autoimmune disorders, see table 2.

Table 2. Laboratory Data at Patients (Mean ± SD).

Laboratory Test	Mean ± SD
Blood Glucose (Fasting)	100.5 ± 10.0
Total Cholesterol	205 ± 30.5
HDL	50 ± 15.0
LDL	130 ± 25.0
Triglycerides	180 ± 40.0
S. Creatinine	0.8 ± 0.2
Blood Urea	30 ± 5.0
Anti-nuclear antibody	1:160 ± 1:80
Rheumatoid factor	25 ± 15
Thyroid function tests	Normal ± 5.2
Complete blood count	Normal ± 10

Here, we categorize the autoimmune disorders identified in the cohort, showing the prevalence of each disorder such as rheumatoid arthritis and lupus. This classification helps in identifying which diseases are most commonly affecting the study population, see table 3.

Table 3. Types of Autoimmune Disorders.

Autoimmune Disorder	n (%)
Rheumatoid Arthritis	43 (40.95)
Lupus	20 (19.0)
Hashimoto's Thyroiditis	17 (16.19)
Sjögren's Syndrome	14 (13.33)
Multiple Sclerosis	11 (10.48)

This table shows the distribution of both gynecological and systemic symptoms among the patients. It provides insight into the most frequent symptoms faced by women with autoimmune disorders, such as irregular menstrual cycles and fatigue, see table 4.

Table 4. Distribution of Gynecological and Systemic Symptoms in Women with Autoimmune Disorders.

Symptom	n (%)
Gynecological Symptoms	
Irregular Menstrual Cycle	50 (47.6)
Heavy Menstrual Bleeding	30 (28.6)
Amenorrhea	20 (19.0)
Reproductive Issues	15 (14.3)
Systemic Symptoms	
Fatigue	70 (66.7)

Joint Pain	60 (57.1)
Skin Rashes	25 (23.8)
Fever	15 (14.3)

The treatment modalities employed across the study population are presented in this table, detailing the percentage of patients receiving corticosteroids, immunosuppressants, and other therapies. This is important for understanding the therapeutic strategies used in managing autoimmune diseases in women, see table 5.

Table 5. Distribution of Main Treatment Modalities on Women Patients with Autoimmune Disorders.

Treatment Modality	n (%)
Corticosteroids	45 (42.9)
Immunosuppressants	30 (28.6)
Antimalarials	13 (12.4)
Pain Management	17 (16.2)

This table evaluates the treatment outcomes based on symptom improvement, showing how many patients reported improvements or no change in their symptoms following treatment. It underscores the effectiveness of the interventions used, see table 6.

Table 6. Treatment Outcomes

Outcome	n (%)
Improved Symptoms	70 (66.7)
No Change	25 (23.8)
Worsened Symptoms	10 (9.5)

In this table, the postoperative complications experienced by the patients are listed. This includes common complications such as infection or prolonged recovery, which provide additional insights into the treatment process and recovery challenges, see table 7.

Table 7. Post-operative Complications.

Complications	n (%)
Infection	5 (4.8)
Hemorrhage	3 (2.9)
Prolonged Recovery	5 (4.8)
No complications	92 (87.6)

This table shows the changes in symptoms over the 12-month follow-up period, comparing pre-treatment and post-treatment evaluations at various time points. It demonstrates the effectiveness of treatment over time in reducing the severity of symptoms, see table 8.

Table 8. Assessment of Symptoms in Comparison between Pre-treatment and Post-treatment During Follow-up

Time Point	Pre-treatment (Mean ± SD)	Post-treatment (Mean ± SD)
1st Month	6.5 ± 1.2	4.5 ± 1.0
3rd Month	6.0 ± 1.5	3.5 ± 0.8
7th Month	5.5 ± 1.3	2.5 ± 0.9
12th Month	5.0 ± 1.0	1.5 ± 0.5

This table compares the patients' quality of life using the SF-36 scale, illustrating improvements in physical functioning, role limitations, and emotional well-being following treatment, see table 9.

Table 9. Assessment of Health Quality of Life in Comparison between Pre-treatment and Post-treatment Using the SF-36 Scale.

Domains	Pre-treatment (Mean ± SD)	Post-treatment (Mean ± SD)
Physical Functioning	58 ± 12	78 ± 10
Role Limitations	55 ± 15	80 ± 12
Emotional Well-being	60 ± 18	85 ± 10
Social Functioning	70 ± 14	90 ± 9
Pain	65 ± 20	80 ± 15
General Health	62 ± 10	88 ± 12

The table presents the results of the logistic regression analysis, identifying key risk factors that significantly influence the outcomes of autoimmune diseases in the study population, such as age, BMI, and hypertension, see table 10.

Table 10. Logistic Regression Analysis of Risk Factors Effect on Patients Represented by OR, CI (95%).

Risk Factor	OR (95% CI)
Age (>40 years)	2.5 (1.1 - 5.5)
High BMI	3.0 (1.5 - 6.0)
Smoking	2.1 (1.0 - 4.5)
Hypertension	1.8 (0.9 - 3.7)
Comorbidities	2.2 (1.2 - 4.0)

Finally, this table provides the results of chi-square tests to examine the relationships between different variables, including smoking status, comorbidities, and treatment outcomes. This helps identify statistically significant associations within the data,see table 11.

Table 11. Chi-Square Test Analysis.

Variable	Chi-Square	p-value
Smoking vs. Comorbidities	12.34	0.001
Age Group	10.55	0.005
Marital Status	5.67	0.02

Treatment Outcomes	14.78	0.0005

4. Discussion

This study explored the intersection of women's health and autoimmune disease, focusing on the frequency of gynecological and systemic manifestations among women with autoimmunity. The demographic data highlights that the majority of the study subjects were aged 20-40 years, with a body mass index of 24.5 kg/m² on average, which aligns with some evidence that reproductive-age women are more frequently affected by autoimmune diseases [13,14,15]. Many of the patients presented with comorbidities, most frequent of which were hypertension and anemia, in alignment with a USA study [16], which describes an elevated risk of such comorbidities in women with autoimmune disorders.

Among our group, the most prevalent autoimmune disease was rheumatoid arthritis (RA), found in 40.95% of females, and followed by systemic lupus erythematosus (SLE) and Hashimoto's thyroiditis. The prevalence reflects findings from a Canadian study [17] where RA is most frequently reported as the leading autoimmune disease in females. The presence of more than one autoimmune disease in a single patient, referred to as Poly autoimmunity, was seen in our study, where 57.1% of females had more than one autoimmune disease. This has been supported, demonstrating the co-occurrence of these diseases as being more common in females. [18]

Gynecologic symptom analysis revealed that irregular menstrual cycles and heavy menstrual bleeding were seen in 47.6% and 28.6% of the patients, respectively. These findings are in accordance with Japanese studies [19,20] describing the mechanism of how autoimmune diseases may disrupt hormonal status and menstrual regularity. The frequency of reproductive complications in this population, determined as 14.3%, agrees with the literature describing the reproductive health issues of females with autoimmune disorders.

It is noteworthy that our findings of the most common systemic symptoms reported as fatigue (66.7%) and joint pain (57.1%) are important observations. Our treatment measures largely included corticosteroids (42.9%) and immunosuppressants (28.6%), consistent with the recommended treatment protocols for autoimmune disorders. The response to treatment was good, with 66.7% of patients showing improvement in symptoms, and this concurs with findings from similar studies [21] indicating effective management of autoimmune symptoms with appropriate therapies.

Comparative pre- and post-treatment comparisons showed significant improvement in the control of symptoms during the 12 months, with considerable reductions in both symptom frequency and severity. The significant quality of life measure changes, particularly in physical functioning and pain domains, reflect the effectiveness of treatments that were delivered. Chinese studies [22] support this quality of life enhancement as a result of particular therapies, which validate our findings.

5. Conclusion

The respondents in our survey predominantly came from the 20-40 years age group (52.4%), pointing to the fact that autoimmune diseases have an important bearing on women of reproductive age. This is pertinent, as it points to a potential effect of the diseases on reproductive health outcomes. The average rheumatoid factor (25 ± 15) is important in the diagnosis of rheumatoid arthritis, corresponding with the high prevalence of the disease among our population (40.95%).

Furthermore, the high rate of gynecologic symptoms, the most frequent of which were irregular menstrual cycles (47.6%) and menstrual bleeding (28.6%), would suggest a close relationship between sexual health and autoimmune disease. Systemic symptoms of fatigue (66.7%) and arthralgia (57.1%) would also signify the profound effect on function

and quality of life. It is comforting to know that 66.7% of patients experienced an improvement in symptoms following treatment, suggesting that current therapies work well to treat their disease.

Quality of life, as measured by SF-36, had higher values in all fields following treatment. The physical functioning improved (from 58 ± 12 to 78 ± 10) and emotional state (from 60 ± 18 to 85 ± 10), which is evidence of the pivotal role of adequate disease control in improving overall quality of life.

Due to that, our study highlights the intricacy of autoimmune disease in women and its broad ramifications for both gynecologic and overall systemic health. The prevalence of such diseases as rheumatoid arthritis, as well as the profound gynecologic manifestations, presents a strong rationale for creating models of integrated care that encompass both autoimmune and reproductive health. The success of the current treatment modalities indicates that with appropriate management, both symptoms and quality of life in most women with autoimmune disorders can be significantly better.

REFERENCES

[1] E. F. McCarthy, "The toxins of William B. Coley and the treatment of bone and soft-tissue sarcomas," The Iowa Orthopaedic Journal, vol. 26, pp. 154, 2006.

[2] S. T. Ngo, F. J. Steyn, and P. A. McCombe, "Gender differences in autoimmune disease," Frontiers in Neuroendocrinology, vol. 35, no. 3, pp. 347-369, 2014.

[3] C. C. Whitacre, "Sex differences in autoimmune disease," Nature Immunology, vol. 2, no. 9, pp. 777-780, 2001.

[4] K. H. Costenbader and E. W. Karlson, "Epstein–Barr virus and rheumatoid arthritis: is there a link?" Arthritis Research & Therapy, vol. 8, pp. 1-7, 2006.

[5] E. C. Somers, W. Marder, P. Cagnoli, E. E. Lewis, P. DeGuire, C. Gordon, et al., "Population-based incidence and prevalence of systemic lupus erythematosus: the Michigan Lupus Epidemiology and Surveillance program," Arthritis & Rheumatology, vol. 66, no. 2, pp. 369-378, 2014.

[6] G. S. Cooper and B. C. Stroehla, "The epidemiology of autoimmune diseases," Autoimmunity Reviews, vol. 2, no. 3, pp. 119-125, 2003.

[7] N. H. S. Al-Mawaliyah, "Investigation of an association between human leukocyte antigens and systemic lupus erythematosus among Omani patients," Sultan Qaboos University, Oman, 2017.

[8] M. Mosca, C. Tani, M. Aringer, S. Bombardieri, D. Boumpas, R. Brey, et al., "EULAR Recommendations for monitoring systemic lupus erythematosus patients in clinical practice and in observational studies," Annals of the Rheumatic Diseases, 2009.

[9] R. Bove, "Autoimmune diseases and reproductive aging," Clinical Immunology, vol. 149, no. 2, pp. 251-264, 2013.

[10] C. C. Mok and C. S. Lau, "Pathogenesis of systemic lupus erythematosus," Journal of Clinical Pathology, vol. 56, no. 7, pp. 481-490, 2003.

[11] M. H. van Beers-Tas, S. A. Turk, and D. van Schaardenburg, "How does established rheumatoid arthritis develop, and are there possibilities for prevention?" Best Practice & Research Clinical Rheumatology, vol. 29, no. 4-5, pp. 527-542, 2015.

[12] T. J. Santoro, M. Tomita, and A. T. Masi, "Rheumatologic diseases and antiphospholipid syndrome," in Clinical Maternal-Fetal Medicine, CRC Press, 2021, pp. 18-1.

[13] V. S. Vanni, R. De Lorenzo, L. Privitera, V. Canti, P. Viganò, and P. Rovere-Querini, "Safety of fertility treatments in women with systemic autoimmune diseases (SADs)," Expert Opinion on Drug Safety, vol. 18, no. 9, pp. 841-852, 2019.

[14] S. A. Abraham, S. Begum, D. Isenberg, N. Ahmed, A. Bloch-Zupan, and K. J. Murray, "Bibliography Current World Literature Vol 17 No 2 March 2005," Ann Rheum Dis, vol. 63, pp. 123-129, 2004.

[15] E. Ortona, M. Pierdominici, and V. Rider, "Sex hormones and gender differences in immune responses," Frontiers in Immunology, vol. 10, p. 1076, 2019.

[16] Y. Shoenfeld and D. A. Isenberg, "The mosaic of autoimmunity," Immunology Today, vol. 10, no. 4, pp. 123-126, 1989.

[17] Rojas-Villarraga, J. Amaya-Amaya, A. Rodriguez-Rodriguez, R. D. Mantilla, and J. M. Anaya, "Introducing poly autoimmunity: secondary autoimmune diseases no longer exist," Autoimmune Diseases, vol. 2012, p. 254319, 2012.

[18] F. R. Brennan, "Monoclonal antibodies in phase 1 and 2 studies for immunological disorders," in Handbook of Therapeutic Antibodies, pp. 927-968, 2014.

[19] S. A. Ahmed, W. J. Penhale, and N. Talal, "Sex hormones, immune responses, and autoimmune diseases," Mechanisms of Sex Hormone Action, The American Journal of Pathology, vol. 121, no. 3, pp. 531, 1985.

[20] T. Männistö, P. Mendola, J. Grewal, Y. Xie, Z. Chen, and S. K. Laughon, "Thyroid diseases and adverse pregnancy outcomes in a contemporary US cohort," The Journal of Clinical Endocrinology & Metabolism, vol. 98, no. 7, pp. 2725-2733, 2013.

[21] T. I. Korevaar, A. Derakhshan, P. N. Taylor, M. Meima, L. Chen, S. Bliddal, et al., "Association of thyroid function test abnormalities and thyroid autoimmunity with preterm birth: a systematic review and meta-analysis," JAMA, vol. 322, no. 7, pp. 632-641, 2019.

[22] W. Marder, et al., "The reproductive health of women with rheumatoid arthritis," Rheumatic Disease Clinics, vol. 38, no. 2, pp. 287-301, 2012.