



Acne rosacea in pregnancy

BY

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Abstract

Acne rosacea (AR) is a long-term skin condition that typically affects the face. It results in redness, pimples, swelling, and small and superficial dilated blood vessels. Often, the nose, cheeks, forehead, and chin are most involved. A red, enlarged nose may occur in severe disease, a condition known as rhinophyma. Patients with AR show a characteristic clinical picture: The condition affects primarily the midface with forehead, nose, chin, cheeks and in rare cases, even the neck and the (hairy) scalp may be affected (extrafacial rosacea). A case-control study was done in the department of dermatology and venerology at Basrah General Hospital with some cases at private clinic. The study was carried out during 1st October 2021 to 30th April 2022. Target population were pregnant ladies with acne rosacea; older than 14 years, divided in to two groups with 50 cases of acne were pregnant who are compared with 50 rosacea patients non-pregnant as control group.

The general characteristics of rosacea patients were ; most of the patients aged ≤ 20 years 72(72%), and those aged 21-30 years were 28(28%), 54(54%) of the patient were from urban areas and 46(46%) of them from rural areas, and 65(65%), had positive family history, most of the patient with mild rosacea (papulopustular) 57(57%), followed by sever (glandular) form 26(26%), and mild rosacea (erythrotelangiectatic) 17(17%). Sever form of acne was significantly higher among pregnant group 18(36%), comparing to the non- pregnant group 8(16%). The multivariate logistic regression of the different variable to predict severe rosacea form show that pregnancy is significantly related with 8.3 times risk of severe rosacea occurrence, (OR= 8.3, (CI: 1.8-37.8), living in urban areas related with 2.5 times risk of rosacea occurrence, (OR= 2.5, (CI: 0.5-12.4), positive family history related with 1.8 times risk of severe rosacea occurrence, (OR= 1.8, (CI: 0.4-8.4). Age (21-30 year) is related with 1.8 times risk of severe rosacea occurrence, (OR= 1.8, (CI: 0.3- 10.1). Pregnancy had a straight correlation with rosacea, non-significant correlation was found regarding residence, age, and family history.

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Introduction

Acne rosacea (AR) is a long-term skin condition that typically affects the face. It results in redness, pimples, swelling, and small and superficial dilated blood vessels. Often, the nose, cheeks, forehead, and chin are most involved. A red, enlarged nose may occur in severe disease, a condition

known as rhinophyma⁽¹⁾. Prevalence rates for ocular involvement in rosacea patients range from less than 10% to more than 50%. Cutaneous rosacea exhibits a strong female predominance, with the exception of phymatous rosacea, and is usually diagnosed after the age of 30 years.⁽²⁾ A patient's particular genes may contribute to his or her development of rosacea as an



adult. Of those with rosacea, 10-20% report a family history of rosacea.⁽³⁾ The higher incidence of rosacea in those of Celtic or Northern European descent also suggests a possible genetic component. Still, several genomic studies have failed to pinpoint a causative gene.⁽⁴⁾ The innate immune system serves as the body's nonspecific, acute defense mechanism against infections and other environmental stimuli. When triggered, it leads to the controlled release of numerous cytokines and antimicrobial peptides in the skin. The innate immune system seems to be disrupted in patients who have rosacea.

In 2007, Yamasaki et al illustrated that facial skin from patients with rosacea displays unusually elevated levels of an antimicrobial peptide called cathelicidin as well as cathelicidin's processing enzyme, a serine protease called kallikrein.⁽⁵⁾ Kallikrein cleaves cathelicidin into a smaller, active peptide called LL-37. In addition to being more abundant, the LL-37 found in those with rosacea is smaller than in those unaffected by rosacea. These mutant forms of LL-37 are able to upregulate the innate immune system with resultant inflammation and angiogenesis.⁽⁶⁾ Yamasaki et al further demonstrated this concept with a study that involved the injection of cathelicidin peptides from rosacea patients into murine skin that led to inflammation and vasodilation.⁽⁷⁾ Persistent background centrofacial erythema and telangiectasias remain a key diagnostic clue to the diagnosis of rosacea. An acute, transient worsening of facial erythema, known as flushing, can occur after exposure to various triggers.⁽⁸⁾ Flushing occurs when a trigger results in an exaggerated vasodilation response by cutaneous vasculature. For example, compared to controls, patients

with rosacea were found to flush more readily after heat exposure.⁽⁹⁾ Other possible triggers include spicy foods or alcohol, but the exact mechanism of how these dietary factors play a role in the pathogenesis has yet to be elucidated. Various medications, such as amiodarone, topical steroids, nasal steroids, and high doses of vitamins B6 or B12, are other less frequently described potential rosacea triggers.⁽¹⁰⁾ One study found the endothelial cells lining blood vessels and lymphatics in those with rosacea express higher levels of vascular endothelial growth factor (VEGF), CD31 (an endothelial cell marker), and CD2-40 (a lymphatic endothelial marker).⁽¹¹⁾ Demodex mites are a normal commensal organism found within the pilosebaceous units of facial skin. However, many studies have found a higher density of mites on the skin of patients with rosacea when compared to unaffected individuals.

Patient and Methods

The study was conducted at Salaheddin general hospital with some cases at private clinic. It was carried out for a period of six months, from 1st October 2020 to 30th April 2021. The data collected in the out patient in the department of dermatology and venereology of Salah Aldin general hospital, the obstetric ward at Salah Aldin general hospital, as well as some cases from private clinic. A structured questionnaire is the base of data collection done by the researcher and reviewed by supervisor (Appendix I), it consist of: Demographic information's (name, age, sex, residence, & occupation), staging of acne rosacea, Duration of the disease, Family history of the disease, Location; forehead, neck, nose, cheeks, pregnancy (1st trimester, 2nd trimester, 3rd trimester), Topical and



systemic treatment, Impact of disease on the patient (disfigurement or occupational disability). Statistical Package for Social Sciences (SPSS version 23) was used in statistical analysis. Chi square test and student t-test used for Comparison between groups. Logistic regression analysis & compute odds ratio used to predict acne rosacea severity & effect of pregnancy on it. P-value < 0.05 was considered as level of significance.

Results

The mean age among pregnant ladies with acne rosacea was (20.34 ± 2.8) which is significantly higher than non-pregnant

with acne rosacea age (18.6 ± 2.7) this relation was statistically significant (t- test p value <0.05) as shown in table 1.

Most of the pregnant ladies with acne rosacea live in rural area 26 (52%), while most of

the non-pregnant ladies with acne rosacea live in urban areas 30(60%), this relation was statistically not significant as shown in table 1.

Most of the pregnant ladies with acne rosacea had positive family history 30 (60%), versus 35 (70%) of non-pregnant ladies with rosacea group, this relation was statistically not significant as shown in table 1.

Table 1: The General Characteristics of Study Groups.

Group statistics	Pregnant		Non-pregnant		Total		P value
	No.	%	No.	%	No.	%	
Age pregnant	20.43 ± 2.8		18.6 ± 2.7				0.002
≤ 20 years	34	68.00%	38	76.00%	72	72.00%	> 0.05
21-30	16	32.00%	12	24.00%	28	28.00%	
Residency							> 0.05
Urban	24	48.00%	30	60.00%	54	54.00%	
Rural	26	52.00%	20	40.00%	46	46.00%	
Family history of rosacea							> 0.05
Negative	20	40.00%	15	30.00%	35	35.00%	
Positive	30	60.00%	35	70.00%	65	65.00%	

3rd stage form of rosacea was higher among pregnant group 18(36%), comparing to the non-pregnant group 8(16%), while 1st stage of rosacea found among 4(8%) of the pregnant and 13(26%) of non-pregnant group, 2nd stage of rosacea found among 28 (56%) of the pregnant and 29 (58%) of non-pregnant group, this relation was statistically significant as shown in table 2.

Table 2. The Relation between pregnancy time and staging of rosacea.

Staging of rosacea	Pregnant		Non-pregnan		Total		P value
	No.	%	No.	%	No.	%	
1st stage	4	8.0%	13	26.0%	17	17.0%	<0.05
2nd stage	28	56.0%	29	58.0%	57	57.0%	



3rd stage	18	36.0%	8	16.0%	26	26.0%
Total	50	100%	50	100%	100	100%

The relation between the time of pregnancy and acne rosacea stage show that 11(73.3%) of the 3rd trimester patients had stage three rosacea in comparison to 5(20.8%) in 2nd trimester and 2(18.2%) in the 1st trimester, stage two of acne rosacea found among 7(63.6%) in 1st trimester, 18(75%) in the 2nd

trimester and 3(20%) in the 3rd trimester group , stage one found among 2(18.2%) in 1st trimester, 1(4.17%), and 1(6.7%) in the 2nd and 3rd trimester , this relation was statistically significant , as shown in table 3.

Table 3. The Relation of rosacea severity and pregnancy trimester.

severity of acne	1 st trimester		2 nd trimester		3 rd trimester		Value
	No.	%	No.	%	No.	%	
Mild	2	18.2 %	1	4.17 %	1	6.7 %	< 0.05
Moderate	7	63.6 %	18	75 %	3	20 %	
Severe	2	18.2 %	5	20.8 %	11	73.3%	
Total	11	100.0 %	24	100%	15	100 %	

The multivariate logistic regression of the different variable to predict stage three acne rosacea form show that pregnancy related with 8.3 times risk of stage two rosacea occurrence, (OR= 8.3, (CI: 1.8-37.8) P value <0.05), this relation was statistically significant, as shown in table 3.5. Living in urban areas related with 2.5 times risk of acne rosacea occurrence, (OR= 2.5, (CI: 0.5-12.4) P value >0.05), this relation

was statistically not significant, as shown in table 3.5. Positive family history related with 1.8 times risk of acne rosacea occurrence, (OR= 1.8, (CI: 0.4-8.4) P value >0.05), this relation was statistically not significant, as shown in table 3.5. Age (21-30 year) related with 1.8 times risk of acne rosacea occurrence, (OR=1.8, (CI: 0.3- 10.1) P value >0.05), this relation was statistically not significant, as shown in table 4.

Table 4. The Multivariate Logistic Regression for Prediction of acne rosacea.

	Sig.	Adjusted OR	95% C.I.	
			Lower	Upper
Pregnant	0.006	8.3	1.8	37.8
Urban compared to rural	0.262	2.5	0.5	12.4
Positive family history	0.467	1.8	0.4	8.4
Age (21-30 year) compared to ≤ 20years	0.481	1.8	0.3	10.1

OR: odds ratio, CI: Confidence Interval, P < 0.05 is significant



Discussion

The age distribution showed that most of the patients aged ≤ 20 years (72%), and those aged 21-30 years were (28%), this goes with Naif AA et al (2015) in Iraq⁽¹²⁾ (28.6%) of the patient aged > 21 years and 71.4% < 20 years. In Saudi Arabia Alshammrie FF et al 2020 found⁽¹²⁾ that 37.4% of the acne patient aged 21-25 years and 25% aged 25-29.9 years. Monib KM et al 2020 found⁽¹³⁾ the mean age of onset was 14.9 ± 2.3 years Say YH, Heng AH found that the age were significantly associated with acne rosacea risk among Malaysian Chinese demonstrate a higher risk of Acne rosacea in those aged 20–24 relative to those > 24 ⁽¹⁴⁾.

Previous report by Bhate K and Williams HC 2013 have observed highest acne rosacea prevalence among older teenagers and young adults and lower acne rosacea prevalence among older adults⁽¹⁵⁾, which is in line with the results obtained in this study.

Residency distribution show that 54 (54%) of the patient were from urban areas and 46 (46%) of them from rural areas this goes with Duquia RP et al 2017 who found no difference between urban and rural area⁽¹⁶⁾. Wolkenstein, et al., 2018⁽¹⁸⁾ found that history of acne rosacea in one parent was associated with a 2.7- to 3-fold increased risk of having acne rosacea, almost 8-fold increased risk if both parents had acne (OR=7.887 in univariate analysis). Family History was associated with acne rosacea found in AlHusseini, et al., 2016;⁽¹⁹⁾ found family history is strong risk for acne rosacea OR=4.8. Karciauskiene J et al 2014 found that⁽²⁰⁾

Conclusions

Most of the patients aged ≤ 20 years (72%), and those aged 21-30 years were (28%). Fifty four percent of the patient were from urban areas and (46%) of them from rural areas. Most of the patient with stage mild rosacea (57%), and severe form (26%). Most of the ladies were in 2nd trimester (48%), and 3rd trimester (30%). Severe form of rosacea was higher among pregnant group (36%), comparing to the non-pregnant group (16%).

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