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THE PREVALENCE OF NICKEL DERMATITIS AMONG FEMALES IN IRAQ

Hikmet Jamil⁽¹⁾, Al-Tawil NG⁽²⁾ and Radhi ASJ⁽³⁾

Dept. of Comm. Med.,⁽¹⁾ Dept. of Microbiol.,⁽²⁾ Coll. of Med., Uni. of Baghdad, Iraq, and Ministry of Health⁽³⁾

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نسبة انتشار حساسية التماس بمادة النيكل بين النساء في العراق
لخلاصة:

تم اجراء هذه الدراسة لمعرفة مدى انتشار حساسية التماس لمادة النيكل بين النساء في العراق. لقد تم سؤال 4998 من النساء عن طريق ملاء استمارات استبيان خاصة وكانت النتيجة ان 29.2٪ منهن (1461 من 4998) كانت لديهن هذه الحساسية ومعظمهن كن دون عمر الثلاثين وان الحساسية شملت اليدين في 390 من اصل 1461 امرأة أي 26.7٪. كما أظهرت الدراسة بأن حلق الاذن كاذ المسبب الرئيس للحساسية.

SUMMARY:

An epidemiological study was conducted to find out the prevalence of nickel dermatitis among the female population in Iraq. Questionnaire forms, enquiring about the effect of contact with some nickel-containing objects with the skin, were filled-out by 4998 females. A high prevalence rate of 29.2% (1461/4998), was found and the hands were involved in 26.7% (390/1461) of the cases of nickel dermatitis. Most of the females with nickel allergy were below 30 years of age and earrings were the most common sensitizers.

INTRODUCTION:

Nickel sensitivity is the most common cause of allergic metal dermatitis, particularly in women⁽¹⁾. The incidence of nickel sensitivity varies from one country to another and from one period of time to another probably due to variations in the exposure to nickel. Among 5558 patients (57% females) with dermatitis who were patch-tested in six Scandinavian centres, the incidence of posi-

ve reactions to nickel sulphate (NiSO_4) was 5.9%⁽²⁾. Prevalences of nickel dermatitis ranging from 4.7% to 14.3% were reported from different clinics⁽³⁻⁷⁾. When individuals from the general population were patch-tested, the prevalence of nickel sensitivity among women in Denmark, Finland and USA was around 10%⁽⁸⁻¹⁰⁾. This study was conducted to find out the prevalence of nickel dermatitis among Iraqi females using questionnaire forms. A reasonably accurate impression about the prevalence of nickel sensitivity could be obtained through interviews⁽¹¹⁾.

SUBJECTS AND METHODS:

Questionnaire forms were filled-out by 4998 females during the period April-August 1986. The population sample of the study included females from 26 hospitals and health centres, Colleges of three universities, student's governmental homes, and the general federation of Iraqi women. Age of females, age at onset of dermatitis, occupation, educational level, area of residence, part of the body affected at the start of allergy, the part affected later, hand dermatitis, and consultation for general practitioners or dermatologists or allergy clinics, were taken into consideration. The cause of nickel dermatitis such as earrings, watch straps, braces.....etc, was enquired about. The Dimethylglyoxime (DMG) spot diagnostic test was performed to detect nickel in such objects⁽⁷⁾.

Statistical methods: The chi-square test and the F-test were used. P values of 0.05 or less were considered significant.

RESULTS:

A prevalence rate of 29.2% (1461/4998) for nickel dermatitis was found among Iraqi females (Table 1). The age of onset of the dermatitis is shown in Table 2. The hands were involved in 390 (26.7%) out of the 1461 nickel sensitive females. The most common sensitizers were earrings followed by watch straps, braces and other materials (Table 3).

There was a statistically significant relationship ($P < 0.01$) in prevalence of the dermatitis among females in different occupations (Medical, health, engineering and educational professions, clerks, free jobs, students, housewives, and labourers). However, when different occupations in a similar working environment were considered, no significant differences could be found.

Table 1. Prevalence of nickel dermatitis among females in different age groups.

Age group (years)	No. of individuals	Nickel allergy	
		No.	Prevalence
-15	923	201	21.8
16-20	1 699	398	23.4
21-25	1 492	544	36.5
26-30	405	163	40.2
31-35	293	113	38.6
36-40	101	21	20.8
41-45	52	8	15.4
46-50	29	10	34.5
50±	4	3	75.0
Total	4 998	1 461	29.2

Table 2. Age groups and age of onset of nickel dermatitis.

Age groups (years)	Age of onset							Total	%
	-15	16-20	21-25	26-30	31-35	36-40	41-45		
-15	201	0	0	0	0	0	0	201	13.8
16-20	248	150	0	0	0	0	0	398	27.2
21-25	41	180	323	0	0	0	0	544	37.2
26-30	16	19	72	56	0	0	0	163	11.2
31-35	13	2	4	67	27	0	0	113	7.7
36-40	6	1	1	3	7	3	0	21	1.4
41-45	1	0	0	0	0	4	3	8	0.6
46-50	1	2	1	2	0	2	2	10	0.7
51+	0	0	0	0	1	0	2	3	0.2
Total	527	354	401	128	35	9	7	1 461	100

Table 3. Nickel source.

Metal source	Nickel allergy	
	No.	%
Earrings	579	40.0
Watch straps	373	26.0
Braces	263	18.0
Necklaces	218	15.0
Bras	188	13.0
Stocking buttons	178	12.0
Shoe laces	174	11.9
Pens	48	3.3
Coins	42	2.9
Metal buttons	32	2.0
Hair pins	27	1.8
Keys	10	0.7
Pins and Needles	3	0.2

Considering different educational levels (Postgraduates, College, institute, high school, intermediate school, elementary school, antilliteracy school, and illiterates), a statistically significant relationship ($P < 0.001$) was found.

There was a statistically significant relationship ($P < 0.001$) in consultation of general practitioners among females with different educational levels where for example illiterates had more visits to the general practitioner than others. No significant relationship was found regarding visits to dermatologists. There were only 36 females who consulted specialists in the allergy clinic.

Regarding the area of residence where Baghdad province was divided according to the division made by the Ministry of Health (Al-Resafa, Al-Adamia, Saddam, Al-Karkh, Al-Kadhnia, Al-Mahmudia and Al-Madaen districts), a statistically significant relationship ($P < 0.001$) was found.

DISCUSSION:

Nickel metal is allergenic as it is dissolved on the skin surface and in fact it is the major cause of nickel dermatitis⁽¹²⁾. Perspiration, pressure and friction affect the severity of nickel dermatitis in sensitized individuals⁽¹⁾. In industrial and probably also in non-industrial countries, nickel is ubiquitous and everyone is in daily contact with it⁽⁷⁾.

The high prevalence rate (29.2%) of nickel dermatitis among Iraqi females

might be due to an increase in the use of nickel containing objects (eg earrings). The hot climate may be a precipitating factor. In Kuwait, where the climate is also so hot, a much lower prevalence rate was reported by Kanan⁽¹³⁾. However, his study was done in 1969 when nickel containing objects were not widely used.

The working environment might have an effect on the prevalence being more among housewives followed by labourers especially those working in sales which might be due to increased exposure to nickel containing substances.

Education might have an effect also since the prevalence was more among those at the antilliteracy school level who might use costume jewelry more than others and who might not care for their personal hygiene.

We found a significant difference in the rate of nickel dermatitis among females living in different districts of Baghdad province. These districts are supplied by different nets of water supply which may probably differ in the nickel concentration. Ingestion of small amounts (5.6mg) of nickel has been shown to elicit vesicular eruptions in nickel sensitive patients with hand eczema⁽¹⁴⁾.

Even though no patch tests⁽⁷⁾ nor DNA-synthesis tests⁽¹⁵⁾ were done to confirm specific sensitivity to nickel in our study, we can still consider that the prevalence rate of nickel sensitivity among Iraqi females is very high and that certain measures should be applied to help in prevention of such a problem. These may include a health education program and regulations regarding the manufacture of nickel containing objects.

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