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Scabies Infection in Thi-Qar Province

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ABSTRACT
Aim: This study was conducted to detect the frequency of mange (scabies) in the province of Thi Qar and the most commonly used treatment for it, in addition to measuring the IL-4 levels of selected patients and healthy people as representative marker for activation TH2 and subsequent hypersensitivity reaction.
Methodology: A total of 624 patients with scabies attended the dermatology and venereal department at Al-Hussein teaching hospital in Thi-Qar Governorate, Most of the patients received topical treatment and a few resistant patients received oral treatment.
Fourty of them were selected to measure the levels of IL-4 in serum in addition to forty healthy people as control samples by ELISA.
The results: found that the maximum number of scabies patients was reported within age group 11-20 years 143 (22.9 %), the mange frequency was 55.9% in males and 44.1% in females. Topical 5-10% sulfur treatment was the used treatment in 61.7% of patient. Also, The finding of current study demonstrated increase in the serum level of IL-4 in mange patients serum (902.925 ±83.494pg/ml) comparing with healthy (366.950± 41.674).
Conclusion: Scabies was high in individuals younger than 20 and children which can identified as high-risk category. Topical 5-10% mass treatment is the best suggested treatment for scabies patients in Thi-Qar, also an elevated levels of IL-4 is indication of activation of TH2 that induce hypersensitivity reaction by IgE production.
Keywords: IL-4, Scabies, T helper cell 2 (Th2)
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INTRODUCTION
Scabies is a common infectious disease that affects the skin of humans in both sexes. It is characterized by intense itching, especially at night, scabies is a global disease that spreads globally. It has become one of the health problems that accompanied humans for more than (2500) years, and there is no accurate figure for the number of annual cases of infection in the world, and the expected number is about (300) million people, i.e. (5)% of the world's population [1,2] .
The disease is more common in institutional settings such as prisons and aging homes, Where disease outbreaks are announced frequently. The spread of scabies usually happens during unfavorable events like wars, floods, earthquakes, and other induced critical natural and human times [3, 4].
Mange affects both indifferent male and female age groups, also it is predominant in countries with a tropical climate. The poor living in rural areas the most affected by scabies [5]
In Iraq, a study in Karbala demonstrated that the percentage of scabies infection was 10.75% [6]. On the other hand, in Najaf Al-Musawi and others found that the infection rate was 6.54% for the year 2012 [7]. Moreover, in northern Iraq, data showed that scabies infection was 5.5% in Dohuk [8].
Data on human immunity for scabies are available, but there is a paucity of studies that address immune changes that occur in the human systemic immune response. A previously performed publication indicated that inflammatory cells (eosinophils, lymphocytes, macrophages) are the most common cells at the site of the lesion [9].
Eosinophils are controlled by immune infiltration, and their detection is consistent with high expression of Th 2 representative of IL-4, IL-5 and IL-13 in complement system [10]. Eosinophils can also regulate the inflammatory response to Th1 via secretion of inflammatory cytokines such as IL-12, and play a significant role in natural immunity [11].
Thus this study was conducted to estimate the frequency of scabies in a Thi-Qar province and the common treatment for it, also to measure the levels of IL-4 in forty selected patients and forty healthy people as indicator for th2 cells response of scabies infection

MATERIALS & METHODS
All patients who came to the dermatology and venereal clinic at Al-Hussein teaching hospital in Thi Qar Governorate during the twelve months (2016) period were enrolled in the study. Cases of scabies were diagnosed depending to traditional criteria. A total cases of 624 patients who presented to the dermatology clinic with scabies were included in the study, 349 (55.9%) were male; and 275 (44.1%) were Female, with age range from 1 month to 90 years.
The assumed diagnosis of scabies was based on complaints of itching symptoms and physical examination of the site in question. The whole body was examined for each patient [12]. Scabies burrows were depicted with mineral oil or ink. A clear diagnosis was obtained by microscopically identifying the mites, their feces or eggs, by scraping a specimens from the burrow site or from under the patient's nails. After the diagnosis, each patient received topical 5% - 10% (according to age) sulfur for three successive days, or permethrin cream 2.5% - 5% single topical application and repeated after week, and was directed to apply the drug over his entire body from neck to planter aspect of feet, children were instructed to be washed after 10 hours, while adults were directed after 12 hours. and oral ivermectin was used with patients who resistant to topical treatment cases .

Blood collection
1 ml of serum samples were collected from scabies patients as well as the control group. After separation of 2-3 ml of venous blood which coagulated at room temperature for 30-60 minutes, by centrifuge at 3000 rpm for five minutes

and the samples were preserved at- 20 ° C until it is used to measure IL-4

IL-4 detection

IL-4 was measured in both categories of individuals, using the human IL-4 enzyme linked immunosorbent assay, according to manufacturers' instruction, Elabscience –USA.

RESULTS & DISCUSSION

A total of 624 patients who came to the dermatology department with scabies were included in the study. Of this total, 349 (55.9%) were male; and 275 (44.1%) were female.

The current study showed an increase in the number of scabies cases in dermatological patients at Al-Hussein Teaching Hospital. The frequency was generally higher in children and younger than in other study category members (Table 1). In Iraq, previously recorded reports demonstrated lower prevalence rates than those identified in current investigation [13,14]. In this paper, the highest number of scabies patients was recorded in the 11-20 age group 143 (22.9%), and the least number for one patient (0.16%) was in the 81-90 age group. Other cases of scabies were also distributed among the age groups as reported in (Table 1). So individuals under the age of 20 and children appear to be more likely to develop mange in our study. This can be explained by the fact that most patients of this group are among school students, in addition to activities and social contact lifestyle for this age group. The current finding are close with that of Al-Musawi study [15].

Table 1: The distribution of patients with Scabies according to the gender and age groups.

Age groups(years)	Scabies cases	
	No.	%
1 month-year	20	3.2
1 -10	136	21.8
11-20	143	22.9
21-30	114	18.2
31-40	91	14.5
41-50	71	11.4
51-60	29	4.6
61-70	14	2.2
71-80	5	0.8
81- 90	1	0.16
Total	624	100%

The distribution of patients by sex pointed that the ratio of males to females in this study was 1.2: 1, that means male dominance and this result was consistent with data reported by other researchers in Iraq, and this increase supports previous results that scabies are more common in male than female [14,15].

In Diyala the data of Ibrahim and collegses showed that male patients formed (76.5%) compared to (23.5%) females [16].

The high incidence of mange in men more than women reflects a higher exposure of males to difference environmental or occupational hazards in the workplace (military forces) or in heavily polluted living conditions, as males are the most traveled and contact with other people compared to women.

It appears from the distribution of study subjects regarding seasonal changes that there is an increase in the number of patients in summer and spring compared to winter and autumn (Table 2). Previous finding studies have shown that temperature is one of the climatic factors that affect scabies infection [17]. Mange is a type of parasitic infection caused by *Sarcoptes scabiei* mites. High temperatures play an important role in accelerating the death and droughts of these mites [17]. By contrast, mites have a better chance of survival and higher fertility rates in cold weather, but the results of the current study differed with these facts. Studies show that scabies mites can live for a long time (up to 19 days) in a cool, humid environment compared to general indoor conditions (only 1.5 days) [17]. Despite the results of studies conducted on scabies in developed countries that describe the outbreak of the disease in cold weather in winter, most of the cases recorded in our study were in the summer and spring, and the reason for this outbreak may be the gatherings in religious visits that occurred during these times in addition to The summer and spring in Iraq represent the most appropriate time for travel and recreation, so hotels may be the source of scabies

Table 2: The distribution of patients with Scabies according to the seasonal variations.

Season	Patients(No.)	%
WINTER	119	I9.1
SPRING	203	32.5

SUMMER	193	30.9
FALLING	109	17.5
TOTAL	624	100

The high percentage of patients 385 (61.7%) had been treated with sulfur 5-10%, and 233 (37.2%) patients treated with permethrin and only seven (1.1%) patients who had been resisted the topical treatment retreatment with oral ivermectin alone. All patients were asked to treat them and all family members and contacts close to them simultaneously, regardless of whether or not symptoms appear on them to prevent them getting infected again, they were also asked to cleanse all bedding, towels and clothes at the time of treatment [1,18]. So the current results reported that the both topical treatment were an effective treatment method for scabies in (90-100%) in patients. Alsamarai (2009) found that topical permethrin cream was a significant treatment for mange [14].

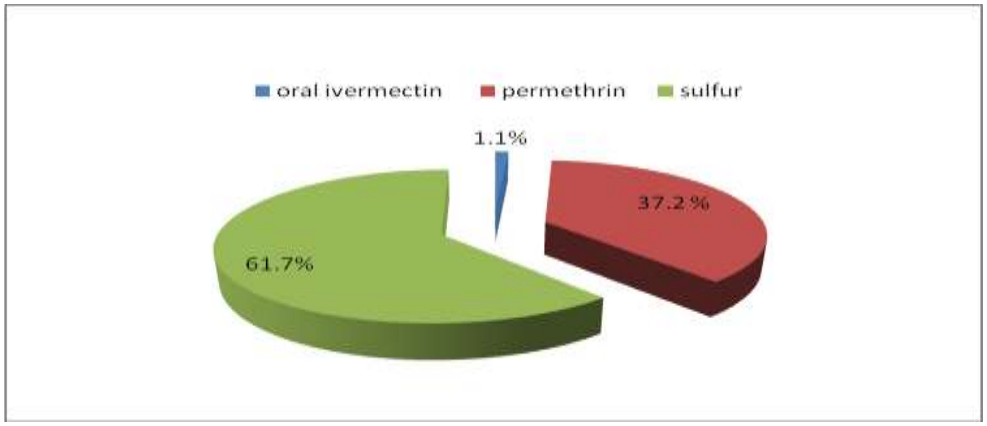

Figure 1: The typed of Scabies Treatments

IL-4 Sera Levels by ELISA

The (Table 3) indicates serum levels of IL-4 in patients and healthy people. As demonstrate in the table, the findings recorded an increase in the level of IL-4 in the serum of scabies patients compared with healthy subjects. These results are compatible with Iraqi study by Al-Mousawi and others [15], and Mounsey *et al.* study Who reported that there was an increase in IL-4 levels in scabies patients compared to the health group [19] . On the other hand, Walton et al (2010) indicated that there were no statistically significant differences in IL-4 levels between mange patients and healthy groups [20].

Table 3: Sera levels of IL-4 in Mange patients and healthy subjects

Groups	No.	IL- 4 Mean
Patient	40	902.925 ±83.494
Healthy	40	366.950± 41.674
P value		0.0001

IL-4 is cytokine produced by Th2 cells. Therefore, high IL-4 levels indicate that TH2 cells are activated in mange patients. IgE production is regulated by IL-4, mast cells and eosinophil are produced and induced by IL-4, and these cells can produce this intulukine which plays a role in amplifying the inflammatory response and has significant role in chemotactic immune response of skin lesion [21].

It was conclude that mange was high in individuals younger than 20 and children which can identified as high-risk category. Topical 5-10% mass treatment is the best suggested treatment for scabies patients in Thi-Qar, also an elevated levels of IL-4 is indication of activation of TH2 that induce hypersensitivity reaction by IgE production .

REFERENCES

1. Chosidow, O. Clinical practices .Scabies N. Engl. J. Med.2006; 354 : 1718-1727.
2. Karin, H. ; L. Romani ; R. Filimone. K .Kishore ; M. juicakan; j. Koroivueta ; J .M. Kaldor ; H. Wand ; A. steer and M .Whitfeld . Scabies community prevalence and mass drug administration in two Fijian villages . Int. J. Dermatol.2-14; 53 : 739-745.
3. M McDonald, BJ Currie, JR Carapetis . Acute rheumatic fever: a chink in the chain that links the heart to the throat, Lancet Infect Dis, 2004; 4:240-245.
4. Chosidow . Clinical practices. Scabies N Engl J Indian Med, 2006; 20: 354-356.
5. Anderson KL, Strowd LC. Epidemiology, diagnosis, andtreatment of scabies in a dermatology office. J Am BoardFam Med 2017; 30: 78-84.

6. Al Hassan AT. The pattern of skin diseases in Karbala city: a retrospective study. QMJ. 2011;7:117-28.
7. Al-Musawi MM, Hasan HR, Maluki AH. Prevalence of scabies among patients attending the dermatology outpatient clinic in Najaf governorate, Iraq. J Adv Med Res. 2013;3:63-70.
8. Mero WM, Hassan HK. Incidence of human scabies in Duhok province, Kurdistan, Iraq. J Uni Zakho. 2014;2:285-92.
9. Bhat, S.A.; Mounsey, K.E.; Liu, X. & Walton, S. F. Host immune responses to the itch mite, Sarcoptesscabiei, in humans. Parasites and Vectors.2017;10(1): 10:385.
10. Worth C, Heukelbach J, Fengler G, Walter B, LiesenfeldO, Feldmeier H. Impaired quality of life in adults andchildren with scabies from an impoverished community inBrazil. Int J Dermatol 2012; 51: 275-282.
11. Anderson KL, Strowd LC. Epidemiology, diagnosis, andtreatment of scabies in a dermatology office. J Am BoardFam Med 2017; 30: 78-84.
12. Roberts LJ, Huff am SE, Walton SF, Currie BJ (2005). Crusted scabies: clinical and immunological findings in seventy-eight patients and a review of the literature. J Infect; 50: 375–81.
13. Al Rubaiy KK . Determinants and illness behavior of patients with skin diseases in Basrah Governorate. Ph.D. thesis, Basrah University College of Medicine.2001; 1-253.
14. Alsamarai A.M. Frequency of Scabies in Iraq: Survey in a Dermatology Clinic . J *Infect Dev Ctries* 2009; 3(10):789-783 .
15. Al-Musawi1 M. M , Hasan H. R., Maluki A. H. Relationshipbetween TH1, TH2 Immune Responses and Serum SOD Activity In Scabies . Journal of Advanced Biomedical & Pathobiology Research., 2014; 4, (1) :1-15.
16. Ibrahim K. k, Ali A. I. , Mohammad B. Clinical Usefulness of IgE as a Serological Marker for Diagnosis of Nodular Scabies in Diyala Province. Diyala Journal of Medicine 2012; 2, (1): 60-65 .
17. Liu1J-M, Wang H-W, Chang F., Liu Y., Chiu F.and Lin Y-C. The effects of climate factors on scabies. A 14-year population-based study in Taiwan . Parasite.2016, 23, 54.
18. Strong M, Johnstone P . Interventions for treating scabies. Cochrane Database Syst Rev 2007;(3):CD000320.
19. Mounsey , K.E.; Murray, H.C.; Belefeld- Ohmann, H.; Pasay, C., Holt, D.C.; Currie, B.J.; Walton, S.F. &Mccarthy, J.S. prospective study in a porcine model of Sarcoptesscabiei indicates the association of Th2 and Th1 pathways with the clinical severity of scabies. PLOS Neglected Tropical Diseases Journal, 2015 ; 498: 1-17.
20. Walton, S.F.; Pizzuto, S.: Slender, A.: Viberg, L.; Holt, D..' Hales, B.J.; kemp, D.J., currie, B.J; Rolland, J.M &O'Hehir, R.. Increased allergic immune response to Sarcoptesscabiei antigens in crusted versus ordinary scabies. Clinical and Vaccine Immunology, 2010; 17(9): 1428-1438.
21. Zamorano, J.: Rivas, M.D.& Perez, M. Interlukine-4: a multi- functional cytokine. Immunologia.2003; 22(2):215-224.