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PREVALENCE AND MANAGEMENT OF SCABIES IN INTERNATIONAL STUDENTS

[1]Dr Qadeer Shabir, [1]Dr Syeda Qandeel Zahra, [1]Dr Muhammad Mubashir Jamil, [2]Dr Gulnaz Tabassum, [2]Dr Kifayat Ullah Karim, [3]Dr Sajid Mehmood, [2]Dr Shaheer Shah, [2]Dr Abdul Basit Khan

[1]House Officer, Mayo Hospital Lahore, [2]Yangtze University China, [3]House Officer, DHQ Mirpur AJK.

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Abstract:

Objective: *The main purpose of study is to evaluate the cause / etiology of scabies. It was expected that this study would be helpful in identifying the cause of scabies, management and prevention of scabies in international students. Research was descriptive in nature. In research, we used tabulation method for interpretation and objectively exalted every possibility to find out accuracy in getting result to maximum extent.*

Methods: *We used survey method for collection of data from selected population by questioner method. We selected students of MBBS from Yangtze University for our selected research purpose by using systemic sampling method in selection of our samples, including male and female. We selected 32 students from our sampled population and divided into two groups. i.e. 16 students for each group. And collected data of members of diseased and normal group.*

Results: *As international students have to live in hostels, dormitories and apartments together. So, due to overcrowding and poor hygienic conditions international students suffer from scabies. In our diseased group 15 out 16 students diagnosed scabies so, prevalence is 93.75%. After practicing general and specific management, our patients started to recover from scabies within a week (5-7 days).*

CONCLUSION: *We concluded that cause behind itching and rashes are Sarcoptes scabiei which causes scabies. Sarcoptes scabiei is responsible causing Type I and Type IV hypersensitivity which is responsible for itching. Scabies mite live in keratin layer of epidermis and feed there, causing itching and rashes because of initiating HSR. We can investigate and visualize the scabies mites in burrows by Ink test and by microscopy examination. After application of Sulphur ointment and concomitant use of disinfectant to surrounding of the patient (with clothes, rooms, fomites, furniture) the duration of recovery is within 6 days (n=15, p=0.19).*

Keywords: *Sulphur Ointment, Rashes, Itching, Scabies, Hypersensitivity, Streptococcus Pyogens, Bacterial Infection*

Corresponding author:

Dr. Qadeer Shabir,

House Officer, Mayo Hospital Lahore.

QR code

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INTRODUCTION:

Scabies is caused by skin infestation with the mite *Sarcoptes scabiei.* Its common name, the "itch mite". The clinical consequences of secondary bacterial infection, especially with group A Streptococci streptococcus pyogens). Result in significant and frequently unrecognized morbidity. The most common means of scabies transmission is by direct contact between individuals when the mites are crawling on the skin surface. Usually it takes 2 to 6 weeks before itching occurs in a person not previously exposed to scabies. Symptoms develop much more quickly if a person is re-exposed, often within 1 to 4 days. Scabies can be found almost anywhere in the world, with global estimates of up to 300 million people infected, it is not distributed evenly. In developing world, scabies is much more prevalent than in the industrialized world with estimations of 10% of the general population infected and up to 50% of children. There are many factors that influence this even distribution:

Poverty is the leading cause due to the entire knock on affects that seen from it. E.g. in adequate living condition can result in overcrowding and poor sanitation. Overcrowding in particular increases transmission as people are in contact, children more likely to share beds. Another consequence of poverty is low levels of education due to poor finding. In the developed world, scabies is limited to sporadic out breaks and not widespread infection. Although, they can be high (40% to 80%) prevalence amongst vulnerable groups.

MATERIALS AND METHODS:

We used "Burrow-ink-test" for visualization of burrows in patients, which was positive in 15 patients over 16, and negative only in one patient. We visualized burrows by using the "Burrows Ink Test". Ink test require a light source, magnifying lens and a black or blue felt tip pen. After an excoriated, intact wavy red line (burrow) is located, ink is rubbed directly over the suspected burrow. The ink is immediately and gently wiped off with an alcohol impregnated sponge. We remove the excess ink, the remaining ink appeared as a black or blue zigzag line under magnification. We selected an unexcoriated burrow or papule. There are different forms of microscopy but we used compound microscope for examination of slides. (We prepared slides after taking tissue samples from 16 patients as per protocol). In microscopic examination, we observed mites, their eggs and their fecal pellets in stratum corneum.

The equipment, we used for ink test and for microscopic assessment of scabies is as follow:

1. Gloves
2. Slides and cover slips
3. Magnifying lens and light source (Goose neck lamp)
4. Alcohol impregnated (swabs) wipes
5. Felt tip pen (black and blue)
6. Clear nail polish
7. Mineral oil and dropper
8. Potassium hydroxide
9. Applicator sticks
10. Disposable hypodermic needle (18-20 Gauge ×1.5-2.0 inches)
11. Surgical blade handle and No.5 surgical blade
12. Sharps container
13. Compound microscope

RESULTS:

S.No	Patient No.	Date of Starting Medicine	Date of Recovery	Days of Recovery
1.	**1**	2-5-2014	11-5-2014	9 days
2.	**2**	4-5-2014	8-5-2014	4 days
3.	**3**	4-5-2014	9-5-2014	5 days
4.	**4**	2-5-2014	4-5-2014	2 days
5.	**5**	4-5-2014	7-5-2014	3 days
6.	**6**	2-5-2014	9-5-2014	7 days
7.	**7**	13-5-2014	17-5-2014	4 days
8.	**8**	29-4-2014	1-5-2014	3 days
9.	**9**	Negative result		

10.	**10**	29-4-2014	3-5-2014	5 days
11.	**11**	3-5-2014	10-5-2014	7 days
12.	**12**	2-5-2014	4-5-2014	2 days
13.	**13**	2-5-2014	6-5-2014	4 days
14.	**14**	4-5-2014	9-5-2014	5 days
15.	**15**	5-5-2014	9-5-2014	4 days
16.	**16**	6-5-2014	9-5-2014	3 days

Note: Patient number 9 was excluded from the study.

Mean days to cure:

$$= \frac{9+4+5+2+3+7+4+3+5+7+2+4+5+4+3}{15} = \frac{67}{15}$$

=4.5 days

From above data we calculated standard deviation, in primitive way without the use of any software. The result is as follows.

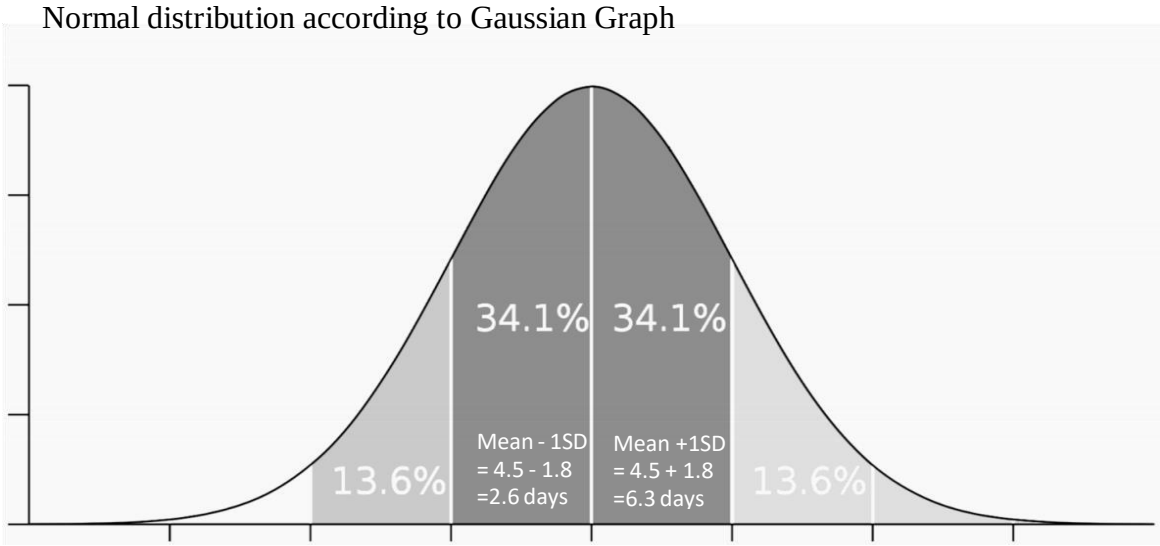
$$\text{SD} = \sqrt{\frac{(9-4.5)^2+(4-4.5)^2+(5-4.5)^2+(2-4.5)^2+(3-4.5)^2+(7-4.5)^2+(4-4.5)^2 \; (3-4.5)^2+(5-4.5)^2+(7-4.5)^2+(2-4.5)^2+(4-4.5)^2+(5-4.5)^2+(4-4.5)^2+(3-4.5)^2}{15}}$$

$$= \sqrt{\frac{53.75}{15}}$$

$$= \sqrt{3.5833}$$

SD = 1.89

Normal distribution according to Gaussian Graph



Mean
4.5 DAYS
SD = 1.8 days

Hence taking Mean ±1 SD, i.e. 68 percent confidence interval, we conclude that 68 percent of people get recovered within 2.6 (3 days) to 6 days.

If we consider only upper limits, 13.6% +68% = 81.6% of people get recovered within 6 days (area under curve of people get recovered in 6 days).

Probability of getting cured within 6 days = 0.81

Therefore, probability of not getting cured within 6 days = 1- 0.81 = 0.19

<u>So, we want to quote the above results as:</u>

Statement:
The curable time after sulfur therapy considering all preventive measure is 6 days (p= 0.19, SD±1 and 81% confidence interval).

DISCUSSION:

This Review includes 48 studies done predominantly in countries with low or medium socioeconomic status, with the exception of Australia where studies involved participants from remote Indigenous communities and three countries in Europe. Although the methods and settings varied from one study to another, the papers included in this Review showed generally high prevalence of scabies and associated impetigo. The Global Burden of Disease Study 2010 provided an estimate of global prevalence but did not seem to base its estimate on a systematic review of the kind reported here. Scabies surveys were not selected on the basis of prevalence; however, they were mostly done in areas where scabies is perceived as a public health problem, and therefore likely to represent high-burden countries. Island countries of the Pacific were the most affected populations, with scabies and impetigo particularly prevalent in children. Other areas where scabies prevalence was especially high included Panama, parts of Brazil, and Indigenous communities of northern Australia. Scabies and impetigo were particularly prevalent in tropical developing countries. The high prevalence in these countries might be due to low socioeconomic status, with resulting domestic crowding, but it might also be because scabies is inherently more suited to a tropical environment. Future studies should be undertaken to assess risk factors for scabies in more detail. Although both skin disorders were more prevalent in children than in adults, they affected all age groups, and some studies showed a tendency for scabies to increase in prevalence in elderly people. Nearly half of the studies included in this Review presented data sampled from all age groups, whereas the other half presented data for children only. Few papers presented a breakdown of scabies and impetigo prevalence by smaller age groups, making a reliable comparison of the disease distribution across age groups difficult between studies. A recommendation for future surveys is that age-specific prevalence be routinely provided, and that conventional 5-year age bands be the default for this information.

In view of the general understanding that scabies is one of the leading causes of impetigo, we were somewhat surprised that we did not note a stronger correlation across populations in the prevalence of the two conditions. Furthermore, some populations stood out for having either high rates of impetigo with relatively little scabies, or vice versa. Explanations for the first category could be an underdiagnoses of scabies, overestimation of impetigo prevalence for the reports for which we relied on pyoderma prevalence as a surrogate measure, or the presence of other important skin pathogens that are responsible for impetigo. In the second category, misdiagnosis is again a possible explanation. Resolution of this uncertainty will need more systematic and standardized surveys of scabies and impetigo, using consistent methods across populations, and further review of prevalence of impetigo and pyoderma worldwide is needed. The main limitation of the available data was the heterogeneity of study design and methods. A key issue was the method of scabies diagnosis, which varied substantially across the included studies (appendix). No consensus criteria for the diagnosis of scabies exist. In some studies, recovery of live mites was needed for the diagnosis of scabies infestation, whereas other studies used a clinical diagnosis, which was based on varying combinations of characteristic appearance (papules), characteristic distribution (such as the web spaces of fingers and toes), and the presence of itch, either in the individual or in family members. The remaining 26 studies did not outline their diagnostic criteria in detail. Standardized and widely accepted diagnostic criteria and guidelines are clearly needed to guide future scabies and impetigo prevalence studies, so that comparison between studies and over time can be made more reliably. A process for the development of consensus and evidence-based diagnostic criteria for scabies is underway, led by the International Alliance for the Control of Scabies.[3] A further limitation was the targeted nature of the scabies surveys. Population-based studies are more likely to be done in settings where scabies is perceived as a clinical or public health issue, in regard to the selection of both the countries and the local areas within countries. Notably, no data from North America and few from Europe were available. Publication bias could arise if scabies and impetigo data are not included in reports of skin surveys, on the grounds that they occurred rarely or were unimportant.

The standard approach to scabies control is treatment of people with symptoms and their immediate household contacts. Although this strategy has provided relief for many individuals with scabies infestation, longitudinal data to suggest success in reducing long-term prevalence are scarce. Reinfestation is common in endemic settings, since people who have been effectively treated often come into contact with members of untreated households. Further, in most settings the recommended treatment

is a topical cream or lotion, such as permethrin or benzyl benzoate. Adherence to topical treatments is often low because they are laborious to apply, are often poorly tolerated because of itch, and are expensive. An alternative to this strategy for endemic and hyper endemic regions is mass drug administration (MDA), which consists of the treatment of the entire community with topical medication, oral medication, or both. This approach has been successfully implemented in remote villages and islands, and in institutional outbreaks in schools, hospitals, prisons, and nursing homes. The oral scabicide ivermectin is an attractive option for MDA. However, its widespread use has been hindered by a scarcity of safety data in young children and pregnant women, treatment cost, and an absence of trial data to support its use as an MDA agent. A 2012 study in Zanzibar assessed the effect that an annual ivermectin MDA programme for lymphatic filariasis had on scabies prevalence by retrospectively reviewing health clinic records for the number of patients treated for scabies. The authors reported a reduction of 68–98% in scabies cases over a 5-year period, suggesting that annual MDA with ivermectin might have had a substantial effect on the burden of scabies in the community. Future studies should assess whether such declines have been seen after ivermectin MDA programs elsewhere, and establish the extent to which trends in clinic-based reports are matched by real declines in population prevalence. If trends in clinic reports are a valid surrogate for scabies prevalence, they could prove to be a more feasible method for impact assessment than prevalence surveys. If MDA programs are to be recommended more broadly for scabies control, further work consisting of mathematical modelling combined with empirical studies will be needed to define the threshold prevalence for taking this approach, as has been done for MDA in other disease areas such as lymphatic filariasis and onchocerciasis.

The Integrated Management of Childhood Illness guidelines[5] are a comprehensive child health strategy developed by WHO and UNICEF for middle-income and low-income countries to identify (and treat) diseases in children younger than 5 years. In Fiji, these guidelines include the assessment of common skin diseases, such as scabies and impetigo, as part of the protocol to assess children's health.[5] We are not aware of such an expanded algorithm for the diagnosis and treatment of common childhood skin disorders being used in any other settings. Most of the studies of scabies prevalence in the Pacific region have been undertaken as international partnerships, allowing the cost, expertise, and time needed for such projects to be shared or obtained from competitive funding sources. The development of standardized algorithms for the diagnosis of scabies is likely to facilitate further scabies prevalence research.

We found that scabies and associated impetigo are common problems in many developing countries, affecting particularly children and communities in underprivileged areas and tropical countries, with a very high prevalence in the Pacific region. Despite methodological limitations affecting many of the published studies, scabies clearly remains a common and under-recognised health issue in many countries. In addition to the development and implementation of improved control strategies, more attention needs to be given to the conduct of comprehensive assessments of prevalence, based on repeatable and well documented methods, to identify the continuing need for and the effectiveness of control strategies as they are implemented.

CONCLUSION:

We concluded that cause behind itching and rashes are *Sarcoptes scabiei* which causes scabies. *Sarcoptes scabiei* is responsible causing Type I and Type IV hypersensitivity which is responsible for itching. Scabies mite live in keratin layer of epidermis and feed there, causing itching and rashes because of initiating HSR. We can investigate and visualize the scabies mites in burrows by Ink test and by microscopy examination. After application of Sulphur ointment and concomitant use of disinfectant to surrounding of the patient (with clothes, rooms, fomites, furniture) the duration of recovery is within 6 days (n=15, p=0.19).

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