Using Pruritus Grading System for Measurement of Pruritus in Patients with Diseases Associated with Itch

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Abstract

Background: Pruritus is a common complaint for patients with dermatologic diseases. Data available regarding pruritus and its characteristics are plentiful but inconsistent. There is a need for the proper assessment of pruritus.

Objectives: An attempt was made to quantify pruritus in 3 groups of patients: atopic dermatitis (AD), psoriasis, and end stage renal disease (ESRD) using the Pruritus Grading System (PGS).

Methods: Patients with AD, psoriasis and ESRD were assessed by a structured questionnaire evaluating the parameters of PGS. Eighty patients were included and the findings of their PGS are presented here.

Results: Patients with AD showed the worst grades of pruritus in the majority of patients. Patients with ESRD had mild to moderate grades in the majority of patients. Patients with psoriasis were less uniform with only around one fifth being severe grade. Interference with sleep was mostly seen in patients with AD while in psoriasis and ESRD, it was much less likely. Overall females had higher PGS scores in all 3 groups.

Conclusion: PGS may be a good assessment tool in evaluating pruritus in AD, psoriasis and ESRD. This study showed that patients with AD are more likely to have moderate and severe pruritus and are more likely to have their pruritus affecting their sleep.

Keywords: Pruritus, pruritus grading system.

(J Med J 2012; Vol. 46 (1):39- 44)

Received	***Accepted***
August 9, 2011	*March 6, 2012*

Introduction

Pruritus is a very common dermatological symptom. This may arise from a primary cutaneous disorder or an underlying systemic disease in an estimate of 10 % to 50% of patients.[1]

Intense pruritus is the hallmark of atopic dermatitis (AD) and is the central criterion required for the diagnosis of AD. [2]

Generalized pruritus can be an intermittent feature of psoriasis in up to 84% of patients. [3] Renal (uremic) pruritus is a common problem and can be localized or generalized. [4] About half of uremic pruritus patients suffer from a continuous itch.[5]

Szepietowski proposed a list of characteristic features of pruritus, the pruritus grading system (PGS) in uremic patients. [5]

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This system includes various parameters of pruritus and scores for each and the patient score is the sum of the scores for all parameters. This system was applied to patients with AD, psoriasis and uremic patients (ESRD) to characterize the pruritus in these patients.

Dermatologists should be experts in pruritus characteristics and analyzing its various parameters as this is the predominant symptom they have to deal with and to which many patients attribute a response or otherwise no response to treatments used. We hope that this will also familiarize the dermatologists with PGS which can be used to measure the pruritus level objectively.

Methods

Patients attending our dermatology out-patient clinics with AD and psoriasis were included in this study. For patients with AD the diagnostic criteria for AD had to be fulfilled for their inclusion in the study. [6,7] Patients with ESRD were included from those attending renal clinics with established diagnosis according to their nephrologist.

A structured questionnaire containing data regarding PGS as well as data including the patient's age, sex, duration of illness and personal or family history of atopy was used to collect data. Consent was obtained from all patients.

The pruritus grading system (PGS) score for each patient was based on: distribution, frequency, severity of itch and quality of sleep as shown in table (1). Each patient's itch grade was calculated as the sum of the individual scores as:
Mild grade: if total score was between 0 and 5.
Moderate grade: if total score was between 6 and 11.
Severe grade: if total score was between 12 and 19.

To be consistent, PGS was performed by only one researcher. The research ethics committee approval was obtained for this work.

Results

Eighty patients (29 patients with AD, 31 patients with psoriasis, and 20 patients with ESRD) were included in this study. Their demographic characteristics are shown in table (2).

Table (3) shows the number and percentage of patients in each PGS parameter according to the disease group. In all groups, patients had multiple or generalized **distribution** with minor differences- statistically not significant- between the three groups (p=0.061). The three groups differed significantly in frequency, severity, and sleep disturbance. **Frequency** was more likely to be episodic in patients with psoriasis (58% of patients) while patients with AD and ESRD had frequent episodes of itch. AD patients were more likely to have continuous itch in about one third of AD patients. Overall patients with AD scored the highest in the frequency parameter. **Severity** was mainly seen as rubbing or scratching in ESRD and psoriasis (65% and 52% of patients, respectively) where in AD it is was much more towards localized excoriations (72% of patients). Again for this parameter AD patients scored overall higher scores in comparison to the other two groups. As for **sleep disturbance** in ESRD and psoriasis, between 60-65% of the patients have their sleep only rarely affected but patients with AD were more likely to have occasional and frequent sleep disturbance (72% of the patients for both grades). Overall, patients with AD have higher PGS scores, and female PGS scores were higher.

Table (1): Pruritus Grading System.

Distribution	*Solitary site*	*1*
	Multiple sites	*2*
	Generalized	*3*
Frequency	*Episodic*	*1*
	Frequent	*3*
	Continuous	*5*
Severity	*Rubbing*	*1*
	Scratching	*1*
	Localized excoriations	*3*
	Generalized excoriations	*5*
Sleep disturbance	*Rare*	*0*
	Occasional	*2*
	Frequent	*4*
	Totally restless	*6*

Table (2): Demographic Data for All Patients Included in the Study.

Disease Group	***Atopic dermatitis (n = 29)***	***Psoriasis (n = 31)***	***End stage renal disease (n = 20)***
Gender, n (%)	*Females 20 (69.0)*	*Females 14 (45.2)*	*Females 7(35.0)*
	Males 9 (31.0)	*Males 17 (54.8)*	*Males 13 (65.0)*

Table (3): Number (and %) of Patients in each PGS Parameter According to Disease Group.

	ESRD	***Psoriasis***	***AD***	***p-value***	***comment***
Distribution				*0.0611*	*No difference in distribution in all 3 groups*
Solitary	*4(20%)*	*3(10%)*	*0(0%)*		
Multiple	*8(40%)*	*18(58%)*	*22(76%)*		
Generalized	*8(40%)*	*10(32%)*	*7(24%)*		
Frequency				*0.002*	*Pruritus in psoriasis less frequent, AD patients have more frequent episodes*
Episodic	*8(40%)*	*18(58%)*	*4(7%)*		
Frequent	*11(55%)*	*7(23%)*	*16(55%)*		
Continuous	*1(5%)*	*6(19%)*	*9(31%)*		
Severity				*0.003*	*AD patients have more severe pruritus*
Rub, scratch	*13(65%)*	*16(52%)*	*4(14%)*		
Localized excoriation	*6(30%)*	*11(35%)*	*21(72%)*		
Generalized excoriation	*1(5%)*	*4(13%)*	*4(14%)*		
Sleep disturbance				*0.001*	*AD patients more likely than other groups to have sleep disturbance*
Rare	*12(60%)*	*20(65%)*	*6(21%)*		
Occasional	*5(25%)*	*7(23%)*	*11(38%)*		
Frequent	*1(5%)*	*0(0%)*	*10(34%)*		
Totally restless	*2(10%)*	*4(13%)*	*2(7%)*		

Discussion

Pruritus is an unpleasant sensation that provokes the desire to rub or scratch the skin to obtain relief. [8] Various mechanisms and mediators are involved in the neurophysiology of this sensation. [8] Pruritus may be due to a skin disease or otherwise due to various medical disorders in up to half of the patients with generalized pruritus. [9] Whenever a physician is faced with a patient complaining of pruritus, history, physical examination and some investigations are done to identify a cause. However, rarely is a proper description of pruritus found or a score which can be used, for example, to assess a response to treatment. Pain, on the other hand, was evaluated using a comprehensive structured questionnaire based on the McGill pain questionnaire for pain evaluation. [10] Existing pruritus scoring systems are subjective and do not include an assessment of various itch parameters, examples include:

1. Pruritus intensity scale of: 0 none, 1 mild, 2 moderate, 3 severe.
2. A verbal four-point intensity scale: 1 none, 2 weak, 3 moderate, 4 severe.
3. A visual analogue scale (VAS) of 10 cm on which subjects were asked to mark the intensity of their itch.

So far there has not been a reliable tool for assessing pruritus in dermatological patients despite being the commonest symptom. As dermatologists we should emphasize on certain features such as location, character, and timing of an itch as this may have implications towards certain diagnoses. Sczepietowski J. proposed a list of characteristic features of pruritus - the pruritus grading system (PGS) - in uremic patients; this system included four features (criteria): distribution, frequency (episodes) per day, severity and sleep disturbance.[5] This system is fairly comprehensive as it combines symptoms with objective findings on the skin and the impact on the patient's sleep and yet gives a better score for all these parameters.

The diagnosis of active AD cannot be made if there is no history of pruritus. [2] The sensation is not constant, but comes in attacks which may be severe and disruptive to the quality of life.[11]

Several mechanisms and mediators may be involved in the pathogenesis of AD -related pruritus.[12, 13, 14.] Psoriasis is also associated with itch. Actually, the word *psora* from Latin means itch. In the most commonly used tool assessing psoriasis severity, the psoriasis area severity index (PASI), itch is not included in the severity scoring.

Renal pruritus presents as a localized or generalized paroxysmal symptom in patients with chronic renal failure. One quarter to one third of uremic patients treated without dialysis exhibit uremic pruritus.[15] In a study of 119 chronic hemodialysis patients, 70 (58.8%) had uremic pruritus. [16] Mechanisms of itch in this condition are not well understood and treatment of itch in this condition can be very challenging.

Looking at the "pruritus pattern analysis" using PGS in the current study, there were several points to comment on.

1. Distribution

In all three groups patients tend to have multiple to generalized distribution much more than being localized. This may be related to the mechanisms and mediators underlying itch where mediators are released systemically causing itch in several body sites. Statistically there was no significant difference among the groups in the distribution of itch.

2. Frequency

AD and ESRD patients were suffering from itch more frequently than psoriasis. Continuous itch was very obvious and marked in AD and less in psoriasis, the least in ESRD. This may reflect a diurnal variation in release of pruritogenic mediators and factors that stimulate itch which seems to be more in AD. However, no clear data is available to make solid conclusions yet.

3. Severity

Localized excoriation was very marked in AD, but less in psoriasis and the least in ERD. Generalized excoriations in AD were slightly higher than in psoriatic patients and the least in ESRD. This may be a reflection of the extent of the presence of pruritogenic substances seen at affected sites which seems to be the highest in AD. Also, various itch mediators and mechanisms which vary in different diseases may give various intensity levels of itch reflected clinically by the patient as simply rubbing skin but on other occasions causing skin excoriations due to more aggressive scratching. Renal pruritus does not tend to cause much release of such mediators which may explain why these patients have fewer excoriations than patients with psoriasis and AD.

4. Sleep disturbance

Overall, it seems that patients with AD are more likely to have sleep disturbance than psoriasis and ESRD. This again is probably a reflection of the intensity of the local response (severity). In other words, if there is a stronger feeling of itch (reflected) by the type of response (excoriations), then there is more likely to be a greater impact on the patient's life including sleep.

Conclusions

PGS seems to be a useful, clinically more objective means of assessing pruritus in various diseases associated with itching including renal pruritus and pruritus associated with skin diseases.

AD patients are more affected by pruritus in comparison to psoriasis and ESRD. Females tend to suffer more from pruritus than males.

It appears that a pattern can be inferred for PGS depending on disease examined in that distribution seems to correlate with the etiologic nature of disease i.e. if the factors causing itch are systemic as in ESRD, the distribution is more towards generalized, but if the disease is a pure skin disorder, then distribution is more towards being localized to the sites affected. On the other hand, other parameters in PGS (frequency, severity and sleep disturbance) seem to correlate

more with the intensity of the local factors causing the pruritic stimulus. So the more inflammatory the disease, the more likely it will score in these areas.

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استخدام مقياس الحك الجلدي لقياس شدة الحكة في بعض الامراض المصحوبة بشعور الحكة

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الملخص

الحكة هي اكثر عرض جلدي شيوعا. مع ذلك فان المعلومات والدراسات حول ذلك قليلة ومتفاوتة مما يشير الى الحاجة لقياس الحكة في الامراض المختلفة.

يتم هنا دراسة الحكة باستخدام مقياس شدة الحك والذي استخدم اساسا لقياس الحكة عند مرضى الفشل الكلوي حيث ان هذا المقياس في اعتقادنا هو مقياس جيد للحكة لكونه يقيس عدة جوانب للحكة مثل شدة الحك، نوع الحك وتاثير الحكة على المريض اضافة الى عدة جوانب اخرى.

راينا في هذه الدراسة ان نستخدم مقياس شدة الحك لقياس شدة الحكة عند مرضى الفشل الكلوي وايضا لمرضى الإكزيما والصدفية (80 مريضا) وقمنا بدراسة النتائج والتي اظهرت فائدة استخدام المقياس ليس فقط لمرضى الفشل الكلوي بل وايضا لمرضى الصدفية والإكزيما واظهرت الدراسة ان مرضى الإكزيما هم الاكثر شدة في الحك كما انهم الاكثر تاثرا خاصة تاثير الحكة على النوم. عموما كانت الحكة عند النساء اشد من الرجال.

الكلمات الدالة: الحكة، مقياس الحك الجلدي.