Stress Factor Influencing the Psoriasis in Tertiary Hospital of Bangladesh

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Abstract

Psoriasis is one of the major public health problems. It creates a major psychological as well as cosmetic problem and a vast reduction of quality of life in developing countries as well as developed countries as stress is considered to play an important role on the onset and exacerbation of psoriasis. To evaluate influence of stress factor in psoriasis. An observational cross-sectional study was conducted with patients with psoriasis who attended the Department of Dermatology and Venereology, Dhaka Medical College Hospital (DMCH) and Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka during the period of July 2015 to June 2016. Divorce was presented in 8.1% cases, 51.3% cases had severe life threatening diseases affecting the patient or close family members, 45.1% patients had history of deaths within the close family members, 39.8% patients had serious financial difficulties and 4.4% patients had harassment at school, 65.5% patients experienced first outbreak of psoriasis during a period of stress. About 41.6% psoriatic patients became worse during times of stress. 38.9% patients had a tendency to break out during times of stress. This study demonstrated that the stress factor is of paramount importance for the development and aggravation of psoriasis.

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Introduction

Psoriasis is a chronic inflammatory disease characterised by T-cell mediated hyperproliferation of keratenocytes.[1] The disease is usually manifested as raised, well-demarcated, erythematous oval plaques with adherent silvery scales.[2] The etiology of psoriasis is not fully understood, but it appears to be multifactorial, involving both genetic and environmental influences.[3] One of the most common triggers for many inflammatory skin disorders is emotional stress. Understanding the significance of emotional triggers to common inflammatory dermatologic disorders is critical for optimal management of these conditions.[4]

A substantial proportion of patients with psoriasis live with the condition as a source of significant psychologic stress.[5] Stress appears to be an important precipitating factor in the development and exacerbation of psoriasis.[3] About 40% of psoriatic patients report that psychosocial stress significantly exacerbates their condition. Certain psychosocial interventions will most likely decrease the morbidity associated with psoriasis among the high stress reactors, and may possibly even result in a decline in the number of major flare-ups of the psoriasis.[6] Stress has been defined in many ways. To the physicist, the term refers to a force, strain or pressure applied to a system. However, when the stress response is excessive or inappropriate, it disrupts physiological homeostasis and body function and contributes to disease production.[7] Although the stress response of the body is meant to maintain stability or homeostasis,

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long-term activation of the stress system can have a hazardous or even lethal effect on the body. Normal physiologic response to stress involves activation of the hypothalamic-pituitary adrenal (HPA) axis, both of which regulate the immune system. The interaction between the axis modulated by when these systems work in harmony. During normal response to stress, there is an evaluation of stress hormones, which serve a protective role. When the normal response to stress is impaired, the defect may have a downstream effect, which flares inflammatory skin conditions.[4]

Psychological stress results in a redistribution of leucocytes with increased trafficking of inflammatory cells into the skin, which may exacerbate psoriasis. Langerhans cells play a role in the stress response of normal skin; their function in the stress response of patients with psoriasis is open to speculation.[8]

Exposure to stress in psoriatic patients has been associated with diminished HPA responses and up regulated sympathic adernomedullary (SAM) responses.[9] Evers et al, found psoriasis patients had significantly lower cortisol levels at moments when daily stressors are at peak levels. Decreased secretion of cortisol and increased levels of epinephrine and norepinephrine may stimulate the release of mast cells, affect skin barrier function, and upregulate proinflammatory cytokines, which could thereby maintain or exacerbate psoriasis severity.[10,11] There have been no formal studies of the perceived influence of stress on psoriasis onset and disease activity in our country. By imposing methodological control and a numerate approach, stress factor influencing the psoriasis can offer a major contribution to understand psoriasis.

Methods

An observational cross-sectional study was conducted with the patients with psoriasis who attended in the Department of Dermatology and Venereology, Dhaka Medical College Hospital (DMCH) and Bangabandhu Sheikh Mujib Medical University(BSMMU), Dhaka during the period of July 2015 to June 2016. Inclusion criterias were patients with various forms of psoriasis in which the diagnosis was made clinically, sometimes confirmed by histopathology; patients of all ages and both sexes with psoriasis and those who were willing to attend a clinical examinations and answering the questionnaire. Exclusion criterias were psoriatic patients having other skin diseases and those who were unwilling to attend a clinical examinations and answering the questionnaire.

Study procedure

The patient with psoriasis fulfilling the inclusion and exclusion criteria attending the inpatient and outpatient department of the study place during study period was included consecutively by non random sampling. Detailed history and through examination was done and information was recorded in structured questionnaire. All the data was collected after taking informed written consent from the patient/ or from legal guardian. All collected questionnaire was checked very carefully to indentify the error in the data. Data processing work was consisting of registration schedules, editing and computerization, preparation of table, analyzing and matching of data. Analysis was conducted on SPSS 22.0 for windows software. Continuous parameters were expressed as mean±SD and categorical parameters as frequency and percentage.

Ethical consideration

Prior to the commencement of this study, the research protocol was approved by the Ethical Committee of DMCH and Institutional Review Board (IRB) of BSMMU. The aims and objectives of the study were explained to the patients in easily understandable local language and then informed consent was taken from each patient. It was assured that all records would be kept confidential.

Results

The main objective of the study was to determine the influence of stress factor in psoriasis. The data obtained from 113 psoriatic patients were as follows:

Table 1: Age distribution of the psoriatic patients (n=113)

Age in years	Frequency	Percentage (%)
10-20	23	20.4
21-30	30	26.5
31-40	21	18.6
41-50	18	15.9
51-60	11	9.7
>60	10	8.8
Total	113	100.0
Mean±SD Range	36.07±16.31 (11-75) years	

Table 1 shows the age distribution of the psoriatic patients, 23(20.4%) were in the age group 10-20 years, 30(26.5%) within 21-30 years, 21(18.6%) belong to age group 31-40 years, 18(15.9%) patients age 41-50 years. The mean age was 36.07±16.31 years.

Table 2: Sex distribution of the psoriatic patients (n=113)

Sex	Frequency	Percentage (%)
Male	64	56.6
Female	49	43.4
Total	113	100.0

Male: female ratio 1.3:1

Table-2 shows the sex distribution of the psoriatic patients. Out of 113 psoriatic patients 56.6% were male and 43.4% were female. The male : female ratio were 1.3:1.

Table 3: Distribution of the psoriatic patients by clinical pattern (n=113)

Clinical pattern	Frequency	Percentage (%)
Plaque type	86	76.1
Guttate	13	11.5
Erythrodermic	11	9.7
Pustular	3	2.7
Total	113	100.0

Table 3 shows that plaque type clinical pattern were found in 76.1% cases, guttate in 11.5%, erythrodermic 9.7% and pustular in 2.7% cases.

Table 4: Distribution of the psoriatic patients by co-morbidity (n=113)

Co-morbidity	Frequency	Percentage (%)
Hypertension	16	14.2
Diabetes	3	2.7
No associated disease	94	83.2
Total	113	100.0

Regarding co-morbidity, hypertension was presented in 14.2% cases; diabetes 2.7% and 83.2% patients had no history of associated disease.

Table 5: Distribution of the psoriatic patients by stress evaluation (n=113)

Stress evaluation	Frequency	Percentage (%)
Stress event affecting life within 2 months prior to disease	79	69.9
Divorce 8	8.1	
Severe life threatening diseases affecting the patient or close family members	58	51.3
Deaths within the close family member	51	45.1
Serious financial difficulties	45	39.8
Harassment at school	5	4.4
Had experience of first outbreak of psoriasis during a period of stress	74	65.5
Psoriasis become worse during times of stress	47	41.6
Psoriasis have a tendency to break out during times of stress	44	38.9

Table-5 shows the stress event affecting life within 2 months prior to disease. Divorce was presented in 8.1% cases, 51.3% cases had severe life threatening diseases affecting the patient or close family members, 45.1% patients had history of deaths within the close family members, 39.8% patients had serious financial difficulties and 4.4% patients had harassment at school, 65.5 patients experienced first outbreak of psoriasis during a period of stress. 41.6% psoriatic patients became worse during times of stress. 38.9% patients had a tendency to break out during times of stress.

Discussion

This was a descriptive, cross-sectional type of observational study conducted in Dhaka Medical College Hospital and Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka with 113 psoriatic patients. The mean age of the patient was 36.07±16.31 years, ranged from 11-75 years. The most represented age group was that of 10-30 years (46.9%). Out of 113 psoriatic patients 56.6% were male and 43.4% were female. Golpour et al. showed that among 100 patients (44 males (45%) and 56 females (55%)) in the case and control groups. Their age range was between 20 and 50 with a mean of 34.28±15.50, which is similar to our study.[12] Sarkar et al. showed age of the psoriatic patients ranged from 21 to 67 with a mean of 42.92 (standard deviation [SD] = 12.20), 31 psoriatic patients were male and 17 were female with a male to female ratio of 1.82:1.[13]

In present study plaque type clinical pattern was found in 76.1% cases, guttate in 11.5%, erythrodermic 9.7% and pustular in 2.7% cases. A similar study done by Golpour et al. reveals ninety-five (95%) were plaque psoriasis (psoriasis vulgaris), three (3%) guttate psoriasis, one (1%) inverse psoriasis, and one (1%) pustular psoriasis.[12] Naldi et al., in a case-control study, found that family history of psoriasis, stressful life events, and recent infectious diseases (like streptococcal pharyngitis group B) are risk factors for a first episode of guttate Psoriasis. [14] Sarkar et al. revealed most of the patients of the study was suffering from plaque psoriasis (68.7%) followed by palmoplantar psoriasis (14.4%), erythrodermic psoriasis (10.4%) and guttate psoriasis (6%). It was seen that, 63.6% of the plaque psoriatic patients had positive psychiatric screener result. Among all types palmoplantar variety and erythrodermic variety had got lowest psychiatric morbidity (42.8%) and guttate had the highest prevalence of psychiatric screener positivity (100%).[13]

Among different types of psoriasis, guttate was associated with highest psychiatric co-morbidity (100%) followed by plaque, erythrodermic and palmoplantar was associated with lowest co-morbidity. Severity of psoriasis was associated significantly higher psychiatric co-morbidity as well as poorer quality-of-life among psoriatic patients. The age, duration of illness, income, sex, presence of relapses and drug treatments or any other clinical or demographical variables except hospitalization were associated to psychiatric co-morbidity.[13]

In the present study we investigated certain psychological aspects in psoriatic patients. Our study underlined the role of the stress factors in the onset or recurrence of the disease. The emotional factor was especially present in the urban population. The most frequent causes for stress were death of a family member, matrimonial problems, and war events. Divorce was presented in 8.1% cases, 51.3% cases had severe life threatening diseases affecting the patient or close family members, 45.1% patients had history of deaths within the close family members, 39.8% patients had serious financial difficulties and 4.4% patients had harassment at school. 41.6% psoriatic patients became worse duration times of stress. 38.9% patients had a tendency to break out during times of stress. Many authors have confirmed similar data. The most common factors for the onset of disease are the environment in which a person has been living and working for a longer period of time, and the attitude of a person toward such an environment. The stage of chronic stress may be recognized by psychodynamic approach analyzing the past and present. Chronic stresses, step by step, affect the organism and finally lead to the manifestation of disease.[15]

Psoriasis is associated with experiencing emotional reactions of varying intensity by the patient. With this illness the patient is not vitally endangered but is, because of the importance of the skin, put into the situation of not being able to enjoy many pleasures of the daily life. Therefore psoriatic patients mostly suffer from depression, anxiety, neurosis and alcoholism.[15,16] Without professional treatment and assistance the patient can hardly escape

from this closed magic circle. Our study, which was carried out on the basis of an accurate history and a questionnaire, indicate that stress is one of the most important factors in the onset of psoriasis.

In present study, 39.8% patients had serious financial difficulties. Many studies reveal that the choice of employment or career, and therefore income, is affected by psoriasis.[17-19] In one study, 40% of patients reported experiencing major difficulties at work[20] and in another, 2% stopped work due to psoriasis. [17] There is an inverse relationship between psoriasis severity, employment and income.[19,21-23] In a study of 601 patients by Horn et al., 31.2% of patients with severe psoriasis had a low income compared with 18.1% of patients with mild psoriasis.[19]

The overall prevalence of stress event affecting life within 2 months prior to disease among psoriatic patients in our study was 69.9%. The prevalence of severe life threatening diseases affecting the patient or close family members was 51.3%. This is in partial agreement with findings of other studies reviewed here.[24] The high prevalence of anxiety can be explained by the fact that patients attending the dermatology clinic have significant apprehension about the illness, duration and outcome of treatment, fear of investigations and anxiety concerning the financial aspects of treatment. However, these aspects were not studied and hence further research is required.

Rigopoulos et al. depicted a majority of patients consider stress to be the main cause for exacerbation of their psoriasis, ranking it above infections, trauma, medications, diet, or weather. Fifty-one patients (39%) recalled specific incidents of stress within 1 month prior to psoriasis exacerbation. The study further observed that the incubation time from specific incidents of stress to psoriasis exacerbation was between 2 days to 1 month.[25] In a subsequent study, Al'Abadie et al. assessed 113 psoriatic patients and determined the incubation time from stressful event to onset of psoriasis was significantly longer than that from stressful event to exacerbation of psoriasis.[26] In a study of 127 psoriatic patients, Gupta et al. found differences between patients who reported that stress flared their psoriasis (stress responders) and patients who reported no association (non-stress responders). Stress-responders described significantly more flare-ups during the 6 months prior to admission, experienced more psoriasis-related daily stress, and relied more upon the approval of others. They also had more severe psoriasis in "emotionally charged" body areas, such as the scalp, face, neck, forearms, hands, and genital region.[6] Verhoeven et al. found a significant association between stress and disease severity. This prospective study of 62 psoriatic patients determined high levels of daily stressors to be related to an increase in disease severity 4 weeks later.[27] Our results from evaluating questionnaires are agreed with all the previous studies.

Conclusion

Results of this study demonstrated that the stress factor is of paramount importance for the development and aggravation of psoriasis. So, management of psoriasis may be optimized by non-pharmacological or pharmacological-psychological intervention. The complete health care of psoriatic patients should include a psychiatrist as well as a dermatologist trained in the field of psychosomatics and psychotherapy.

References

1. *Dobosz AS, Rebala K, Szczezkowska Z, Tobola AW. Correlation of HLA-Cw*06 allele frequency with some clinical features of psoriasis vulgarise in the population of northern Poland. Journal Appl. Genet 2004; 45(4): 473- 476*
2. *Nestle FO, Kaplan DH, Barker J. Psoriasis. The New England Journal of Medicine 2009; 361: 496- 509*
3. *Heller MM, Lee ES, Koo JYM. Stress as an Influencing Factor in Psoriasis. Skin Therapy Letter 2011;16(5):1-4*
4. *Huynh M, Gupta R, Koo JY. Emotional Stress as a Trigger for Inflammatory Skin Disorders. Seminars in Cutaneous Medicine and Surgery 2013; 32: 68-72*
5. *Fortune DG, Richard HL, Griffiths CEM. Psychologic Factors in Psoriasis: Consequences, Mechanisms, and Interventions. Dermatologic Clinics 2005;5(2):681-694*

6. Gupta MA, Gupta AK, Kirkby S, Schork NJ, Gorr SK, Ellis CN, Voorhees JJ. A psychocutaneous profile of psoriasis patients who are stress reactors. A study of 127 patients. Gen Hosp Psychiatry 1989; 11:166-173
7. Burchfield SR. The evolution of the stress response: A new perspective. Psychosom-Med 1979;41: 661.
8. Hunter HJA, Griffiths CEM, Kleyn CE. Does psychosocial stress play a role in the exacerbation of psoriasis? British Journal of Dermatology2013; 169: 965- 974
9. Richards HL, Ray DW, Kirby B. Response of the hypothalamic-pituitary-adrenal axis to psychological stress in patients with psoriasis. Br J Dermatol vol 2005;153(6):1114-20.
10. Zangeneh FZ, Fazeli A. The significance of stress hormones in psoriasis. Acta Medica Iranica 2008; 46: 485-488.
11. Evers AW, Verhoeven EW, Kraaimaat FW. How stress gets under the skin: cortisol and stress reactivity in psoriasis. Br J Dermatol 2010;163(5): 986-91.
12. Golpour M, Hosseini SH, Khademloo M, Ghasemi M, Ebadi A, Koohkan F and Shahmohammadi S. Depression and Anxiety Disorders among Patients with Psoriasis: A Hospital-Based Case-Control Study. Dermatology Research and Practice2012; 2012:1-5.
13. Sarkar S, Sarkar A, Saha R, Sarkar T. Psoriasis and psychiatric morbidity: a profile from a tertiary care centre of eastern India. J Fam Med Prim Care 2014;.3:29–32.
14. Naldi L, Peli L, Parazzini F, Carrel CF. "Family history of psoriasis, stressful life events, and recent infectious disease are risk factors for a first episode of acute guttate psoriasis: results of a case-control study," Journal of the American Academy of Dermatology 2001; 44(3):433–438.
15. Simonic E, Kastelan M, Cabrijan L, Stasic A, Gruber F. The influence of psychological factor on the development and course of psoriasis. Acta Dermatoven APA 2000; 9(1):18-25.
16. Roots S, Keut , Al-Abadie MSK. The relationship between disease severity, disability and physiological distress in patient undergoing PUVA treatment for psoriasis. Dermatology 1994; 189:234-7.
17. Hughes JE, Barraclough BM, Hamblin LG, White JE. Psychiatric symptoms in dermatology patients. Br J Psychol 1983;143:51–54.
18. Fowler JF, Duh MS, Rovba L. The impact of psoriasis on health care costs and patient work loss. J Am Acad Dermatol 2008;59:772–780. doi: 10.1016/ j.jaad. 2008.06.043.
19. Horn EJ, Fox KM, Patel V. Association of patient-reported psoriasis severity with income and employment. J Am Acad Dermatol 2007;.57:963–971.
20. Eghlileb AM, Davies EEG, Finlay AY. Psoriasis has a major secondary impact on the lives of family members and partners. Br J Dermatol 2007;.156:1245–1250.
21. Reich K, Schenkel B, Zhao N. Ustekinumab decreases work limitations, improves work productivity, and reduces work days missed in patients with moderate-to-severe psoriasis: results from PHOENIX 2. J Dermatol Treat 2011;.22:337–347.
22. Kimball AB, Yu AP, Signorovitch J. The effects of adalimumab treatment and psoriasis severity on self-reported work productivity and activity impairment for patients with moderate to severe psoriasis. J Am Acad Dermatol 2012;.66: 67–76.
23. Pearce DJ, Singh S, Balkrishnan R. The negative impact of psoriasis on the workplace. J Dermatolog Treat 2006;17:24–28.
24. Laksmy S, Balasundaram S, Sarkar S, Audhya M, Subramaniam E. A Cross-sectional Study of Prevalence and Implications of Depression and Anxiety in Psoriasis. Indian J Psychol Med 2015; 37(4):434–440.
25. Rigopoulos D, Gregoriou S, Katrinaki A. Characteristics of psoriasis in Greece: an epidemiological study of a population in a sunny Mediterranean climate. Eur J Dermatol 2010; 20(2):189-95.
26. Al'Abadie MS, Kent GG, Gawkrodger DJ. The relationship between stress and the onset and exacerbation of psoriasis and other skin conditions. Br J Dermatol 1994; 130(2):199-203.
27. Verhoeven EW, Kraaimaat FW, de Jong EM. Individual differences in the effect of daily stressors on psoriasis: a prospective study. Br J Dermatol 2009;161(2):295-9.