

The Frequency of Some Dermatoses Related to Increase Solar Radiation Exposure in Sulaimania City

Mohammad Y. Saeed, Ali M. Dhahir, Neaz A. Salih

ABSTRACT:

BACKGROUND:

Various skin disorders are related to increase solar radiation exposure. These diseases mainly increase in spring and summer months among general population due to an increase to sun light exposure and an increase intensity of ultraviolet radiation (UVR).

OBJECTIVE:

This study was done to evaluate different skin diseases related to study the frequency of the skin diseases related to increase exposure to UV light in Sulaimania city.

METHODS:

This is a selective prospective study; the data collected during the period of the January 2006 to September 2007 in Dermatology Department in Consulting Clinic in Sulaimania city, 391 cases were collected in both sexes whose ages ranged between 5 and 73 years with a mean age of 39 years.

Full history and thorough physical examination was done for all patients.

RESULTS:

Three hundred ninety one patients were included in this study ; they were 190 (48.6%) males and 201 (51.4%) females, there ages ranged between 5-73 years with a mean age of 39 years. Sunburn 116 (29.7%) patients was the commonest condition seen, acne like eruption 84 (21.4%) patients, drug photosensitivity: 74 (18.9%) patients, Polymorphous light eruption: 32 (8.1%) patients, Chronic actinic dermatitis: 24 (6.1%) patients, Lichenoid dermatitis: 21 (5.3%) patients, Actinic prurigo like polymorphic light eruption 18 (4.6%) patients, Lichen planus actinicus: 15 (3.9%) patients, Solar urticaria: 5 (1.2%) patients, Porokeratoses: 2 (0.6%) patients, The number of the cases variable during the months from no cases in January and February to the highest numbers during the summer months with a top (149) patients, in August.

CONCLUSION:

To best of our knowledge this is first study done about UVR exposure in Sulaimania city. There are various dermatoses related to increase UVR exposure, as the UV index increases, the number of cases increases. The highest number of cases occurs in summer (especially in July and August), because in summer the UV index reaches its higher levels and the outdoor activities increase with inadequate protective measures in Sulaimania without regular used of sunscreen.

We recommend strict use of sunscreen for males and females especially summer times and avoid going out in specific times of the day especially in summer.

We recommend future studies about tumors, photoaging, DNA repair-defective disorders and dermatoses aggravated by solar exposure like porphyria, SLE, pellagra, rosacea.

KEYWORDS: solar radiation, sun burn, sunscreen, UV index, photosensitivity

INTRODUCTION:

Sunlight is so-called electro-magnetic radiation energy of many different wavelengths emitted by the sun; such energy provides us with the heat and light we need to live and delivers damaging UV rays as well. The way in which this radiation affects us depends on its wave length ⁽¹⁾.

The UV index is an international standard measurement of how strong the UV radiation from the sun is at a particular place on a particular day ⁽²⁾. Factors influencing exposure to UVR are clothing, occupation, life style, age and geographic factors such as altitude, latitude, time of day, season, temperature, humidity, cloud cover, wind, pollutants, window glass, surface reflection and scattering from the sky ^(3,4,5,6).

Susceptibility to damage by UVR may be influenced

Department of Dermatology, College of Medicine,
University of Sulaimani, Iraq.

by genetic and acquired disorders, genetic traits, age-related factors and the use of some medications. There are acute and chronic effects of UA radiation on the skin like sun burn ,tanning as acute effects and photoaging , skin tumor as chronic effects ⁽⁶⁾. There are also acquired diseases that manifest increase light susceptibility such as: Actinic reticuloid, Polymorphous light eruption, Solar urticaria, Hydroa vacciniforme, Actinic prurigo, Lupus erythematosus, Dermatomyositis, Darier disease and Disseminated superficial actinic porokeratosis ⁽⁷⁾. Significant factors that influence susceptibility to UVR damage include race, eye and hair color and skin photo types ⁽⁸⁾.

The aim of the present work is to study the frequency of the skin diseases related to increase exposure to UVR in Sulaimania city populations and the factors increase the intensity of UV radiation.

PATIENTS AND METHODS:

A selective prospective study was done from January 2006 to September 2007.

The patients were collected from Consulting Clinic of teaching hospital/Department of Dermatology in Sulaimania city.

Only those cases were collected that induced after sun exposure at that year, chronic cases produced in previous years were excluded because dermatoses might have been due to other reasons other than ultraviolet light exposure. Photo aging disorders, skin tumors and DNA repair defect disorders were excluded.

Complete history and physical examination of each patient was performed which registered in case sheets designed for this purpose.

Particular attention was paid on a history to: age , sex of the patient, job of the patients, outdoor behaviors, daily sun exposure, and time spent outdoors, timing of the eruption in relation to UVL exposure, and timing of the eruption in relation to the seasons, type and severity of symptoms. Itching is more typical of most photosensitive eruptions, history of exposure photo sensitizers and drug intake. Some medications, topical agents (including sunscreens), and some systemic medication used for nocturnal cramps are important photosensetizers

Previous history of recurrent episodes of the same disorder in present and previous years in the same season, using sunscreens, wearing hat, eye glasses and protective clothes and family history of same disorder.

Examination includes skin photo types, skin lesions, pattern of involvement and sites of sparing

| Skin photo type | Description | Typical features | MED | Minimum SPF |
|-----------------|--|---|--------------------------|-------------|
| I | Always burns, never tan | White skin, blue eyes, blond red hair | 15-30mj/cm ² | ≥ 15 |
| II | Always burns, tans minimally | Fair skin, blue eyes | 25-40mj/ cm ² | ≥ 15 |
| III | Burns minimally, tans slowly | Darker Caucasian skin | 30-50mj/cm ² | 10-15 |
| IV | Burns minimally, tans well | Light brown skin, Mediterranean | 40-60mj/cm ² | 6-10 |
| V | Rarely burns, tans profusely | Brown skin, middle Eastern, latin America | 60-90mj/cm ² | 4-6 |
| IV | Never burns, always tans, deeply pigmented | Dark brown or black skin | 90-150mj/cm ² | Non |

The data of daily UV index from overall 2 years (first January 2006 to 31 October 2007) collected from the data given by internet site web www.temis.nl/uvradiation/world_uvi.html.

Geographical latitude and altitude of Sulaimania were taken from internet website www.who.int/uv/en.

RESULT:

Three hundred ninety one patients were included; they were 190 (48.6%) males and 201 (51.4%) females, there ages ranged between 5-73 years with a mean age of (39) years.

In our study, prevalence of cases was as the following (see figure -1):

1. Sunburn: 116 (29.7%) patients.
2. photosensitivity disorders: 153(38.9) .
 - a. Drug; phototoxicity and photoallergy: 74 (18.9%) patients.
 - b. Polymorphous light eruption: 32 (8.1%) patients.
 - c. Chronic actinic dermatitis: 24 (6.1%) patients.
 - d. Actinic prurigo like polymorphic light eruption: 18 (4.6%) patients.
 - e. Solar urticaria: 5 (1.2%) patients.
3. Lichenoid disorders:
 - a. Solar Lichenoid eruption: 21 (5.3%) patients.

- b. Lichen planus actinicus: 15 (3.9%) patients.
4. Follicular disorders (as acne): 84 (21.4%) patients.
5. Porokeratoses: 2 (0.6%) patients.

Skin types in our study; 232 (59%) were skin type III, 140 (36%) type IV , 11(3%) type II and 8(2%) skin type V (see figure -2).

The number of cases variable during the months from no cases in January and February to the highest numbers during the summer months with a top (149) cases in August (see figure-3,4).

The intensity UV index increases during spring and summer months, so the number of skin dermatoses increase (see table -1) , the UV index some times reaches above 11 (highest level), the geographical latitude of Sulaimania is 35.55 and altitude of Sulaimania is 884.8m which increase intensity of UV radiaton.

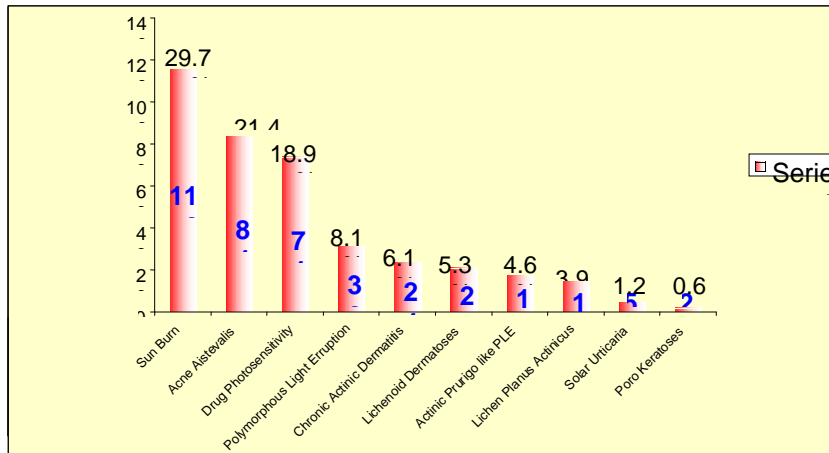


Figure 1: Frequency of skin diseases and their percentages

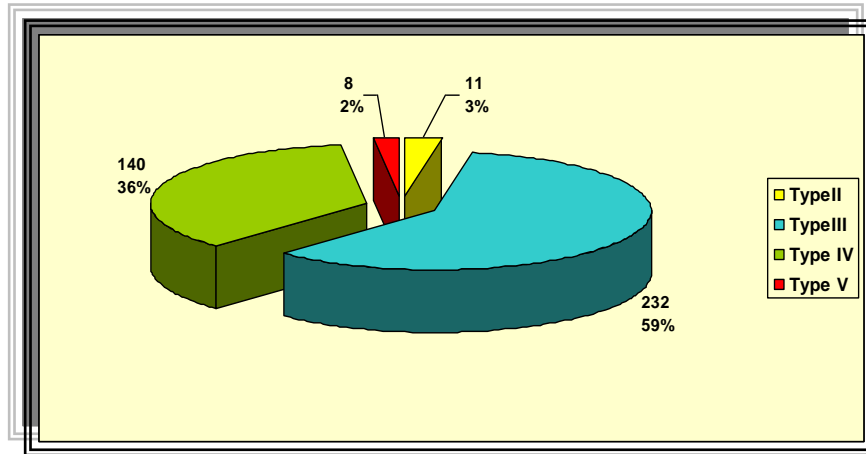


Figure 2: Skin photo type according to Fitzpatrick's classification

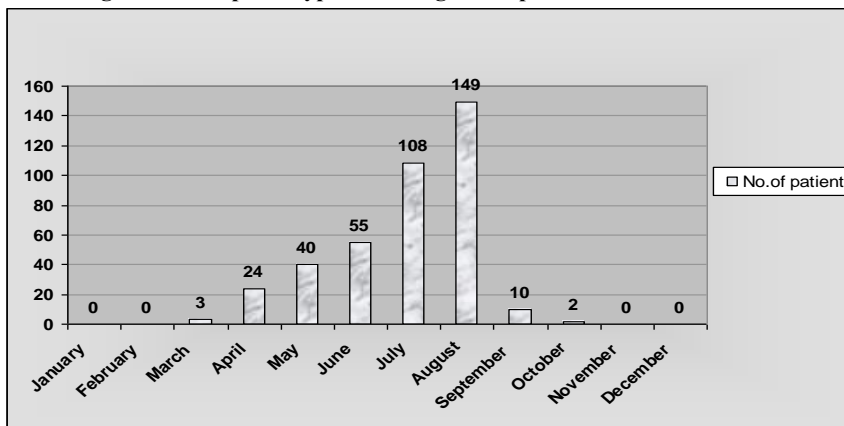


Figure 3: Number of patients according to the months (no. of patients increase in spring and summer months)

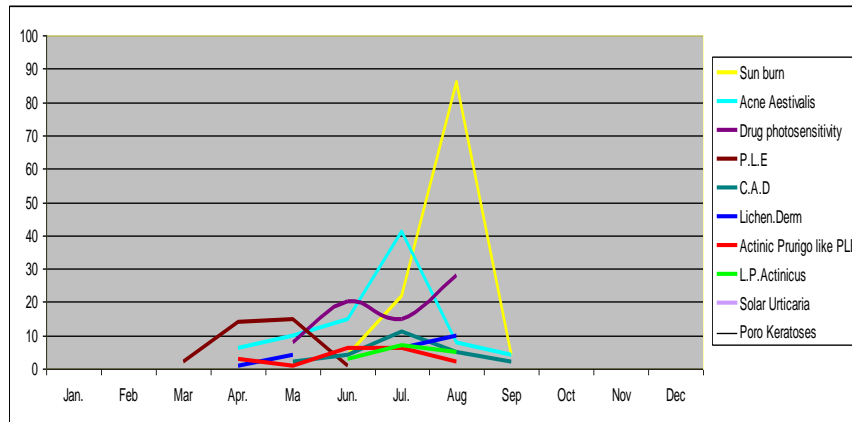


Figure 4: Frequency of each disease according to months.

Table 1: UV index mean and no. of cases monthly

| Ultra violent index | Number of photodermatoses cases | months |
|---------------------|---------------------------------|-----------|
| 2.42 | 0 | January |
| 3.73 | 0 | February |
| 5.59 | 3 | March |
| 7.79 | 24 | April |
| 9.97 | 40 | May |
| 11.67 | 55 | June |
| 11.53 | 108 | July |
| 10.32 | 149 | August |
| 8.45 | 10 | September |
| 5.45 | 2 | October |
| 3.17 | 0 | November |
| 2.13 | 0 | December |

DISCUSSION:

The present study described relatively variety of dermatoses related to UVL exposure in Sulaimania. No previous studies have been carried out in Sulaimania about the correlation between skin dermatoses and intensity of UV index in spring and summer months.

Generally, diseases begin in spring and summer months as UV index increases and reaches above 5, outdoor activities of people living in sulaimania increase and most individuals of our study are skin type III and sun protections are inadequate.

Sunburn cases start in June and reach their peak in August. It is common in the ages (5-46 years) and more in males (76.72 %). Most of the cases are produced after swimming in open pools, as compared to a Canadian study done by Brown TT⁽⁹⁾, the age incidence is (15-24 years). The differences between our findings and those of the study mentioned is attributed to that in Sulaimania population like to go picnics outdoor .

Drug photosensitivity cases start in March and reach their peak in August in our study which is comparable to a study done in Australia by Ikezawa Z.⁽¹⁰⁾

Solar Lichenoid eruption cases produced in summer months, occur mostly in individual with type IV skin photo types (85.71%) and with outdoor activities, approximately the same result is found as that of the Iraqi study done by Khalifa E. Sharquie.⁽¹¹⁾

Actinic porokeratoses cases occur in summer months, when compared to a study done in China by Yang.⁽¹²⁾, there is a similarity in being produced in summer months in people with outdoor activities.

Polymorphous light eruption cases start in March and reach their peak in May. This is similar to a Canadian study done by Fadden N.⁽¹³⁾ as in both studies it is produced after sun exposure.

Actinic prurigo like polymorphous light eruption is new observation in which cases similar to actinic prurigo but last for short duration, can heal completely and reappear again in the same season. This observation need further follow up.

Polymorphous light eruption is (8.1%), chronic actinic dermatitis is (6.1%), Solar urticaria is (1.2%) and Actinic prurigo like PLE is (4.6%). The percentages of dermatoses in the present study is different from studies carried out in New York by Fotiades J. , in Singapore by Khoo SW and in Melbourne by Pao C.^(14,15,16). The differences between our findings and those of other studies might be attributed to many factors as: differences in UVL, altitude, latitude and skin photo types.

CONCLUSION :

To best of our knowledge this is the first study done about UVR exposure in Sulaimania city. There are various dermatoses related to increase UVR exposure, as the UV index increases, the number of cases increases. The highest number of cases occurs

in summer (especially in July and August), because in summer the UV index reaches its higher levels and the outdoor activities increase with inadequate protective measures in Sulaimania without regular use of sunscreen

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