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Original Research Article

Clinico-Demographic Profile of Photodermatoses in Northern Odisha, A Hospital Based Study

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Abstract:

Background: Photodermatoses are a group of inflammatory skin disorders caused or exacerbated by solar radiation, predominantly ultraviolet radiation (UVR). In India, photodermatoses are common due to tropical weather, a lack of knowledge about sun protection measures & inadvertent consumption of phototoxic drugs. With the effects of global warming & depletion of the ozone layer, individuals are experiencing more frequent & severe reactions to solar radiation. So the number of photodermatoses are increasing day by day. Therefore, the present study intends to identify the various clinico demographic spectrums of photodermatoses patients who attended to the tertiary care hospital in Northern Odisha.

Methods: This was an observational cross-sectional study of 337 patients with photodermatoses who attended the tertiary care hospital from March 2022 to August 2023. Detailed history of all patients, their socio demographic information, clinico dermatological findings, laboratory reports & histopathological findings were taken.

Results: Most of the patients (37.1%) belong to the age group 11- 20 years with female preponderance (2.5:1). Majority of them were agriculturist (27.9%) and from rural background (67.7%).In clinical types, polymorphic light eruption was the most common findings (58.4%). Majority of patients (19%) developed photodermatitis after being exposed to sunlight for around 1-2 hours.

Conclusion: There was a female preponderance (2.5:1) and the most common age group 11- 20 years (37.1%) in our study. Polymorphic light eruption was most common finding (58.4%) with majority of patients (19%) developed photodermatitis when exposed to sunlight for around 1-2 hours. Proper awareness & appropriate precautionary measures should be taken to reduce the incidence & recurrence of the disease.

Keywords: Clinico demographic, Photodermatoses, Cross-sectional, Tertiary hospital, Northern Odisha.

Introduction

Photodermatoses are a group of inflammatory skin diseases caused or exacerbated by solar radiation, predominantly ultraviolet radiation (UVR). Acute reactions like sunburn, which are induced by excessive UV radiation, must be differentiated from abnormal responses to sun exposure [1]. However, prolonged and cumulative high doses of UV radiation can prematurely age the skin and can lead to a higher risk of skin cancer. These changes are predominantly caused by medium-wavelength UVB (290–320 nm) and can occur in anyone with sufficiently high levels of UV exposure. However, abnormal reactions are predominantly triggered by UVA radiation (320–400 nm) and do not affect everyone. These abnormal reactions are considered to be true photodermatoses. There are various components that can determine the intensity of damage caused by photodermatoses in an affected individual, like the type of skin, time of exposure, extent of skin exposure, and occupation of the individual

[2,3]. The conditions encompassed in photodermatoses are immunologically mediated diseases such as polymorphic light eruption (PLE), juvenile spring eruption, actinic prurigo, chronic actinic dermatitis, and solar urticaria; genophotodermatoses, which include xerodermapigmentosum, trichothiodystrophy, and Cockayne syndrome; metabolic diseases like cutaneous porphyrias; photoaggravated skin diseases like eczema, psoriasis, and connective tissue disorders; and photosensitivity induced by chemicals or drugs[4].

In India, photodermatoses are common due to tropical weather, a lack of knowledge about sun protection, and the inadvertent consumption of phototoxic drugs. Photodermatoses exert a substantial detrimental effect on both the quality of life and psychological well-being. Patients suffer from uncomfortable symptoms either during or after sun exposure, including intense itching, discomfort, blistering, and scarring[5].

With the rise in global temperatures and the depletion of the ozone layer, individuals are experiencing more frequent and severe reactions to solar radiation. Over the past few years, Northern part of Odisha has remained the hottest part of the country [6]. The majority of the population belongs to lower socioeconomic group especially laborers and farmers who are used to working under direct sunlight. Therefore the number of cases photodermatoses are increasing day by day. There is paucity of data available to assess the clinico demographic profile of photodermatoses in this region[7]. Therefore, this study intends to identify the various clinical spectrums of photodermatoses in patients who visited the dermatology department of a tertiary care hospital in northern Odisha.

Material & Methods

This was an observational cross sectional study carried out in the department of dermatology, PRM Medical College, Baripada from 1st March 2022 to 31st August 2023 after getting approval from institutional ethics committee. After obtaining consent, a detailed history, clinical and dermatological examination of all 337 patients were recorded in a predesigned performa.

Study Tools

All patients having history of photosensitivity with lesions of photodermatoses who attended the dermatology OPD during the above mentioned period were included in the study. Complete history, demographic details like gender, age, occupation, and locality were taken. Findings of the clinical examination such as type of lesion, color of lesion, area of distribution, duration of sunlight exposure and aggravating factors were recorded in the case sheet. In addition to that laboratory investigations such as CBC, LFT, RFT, RBS, ANA, thyroid profile of all the patients and histopathological examination of 25 patients were done.

Data Collection Method

Data of 337 patients were recorded in the data extraction sheet from 1st march, 2022 to 31st august 2023 using the data abstraction form. This study included detailed complete history of all patients, their socio demographic information, clinico dermatological findings, laboratory reports and histopathological findings.

Analysis of Data

After data collection, the data obtained were cleaned, compiled and tabulated. Data were analyzed with the help of IBM SPSS Statistics, version 21.0 (Developed by IBM corps, Armonk New York). Descriptive data were presented with frequency & percentage.

Results

Total of 337 number of photodermatoses patients were enrolled from 1st march 2022 to 31st august 2023. A detailed history and clinical & dermatological examination were collected and tabulated in the prescribed format.

The demographic characteristics of all 337 photodermatoses patients attending the facility are depicted in Table 1.

Table 1: Age and sex distribution

Age in years	Male	Female	Total	Percentage
0-10	5	20	25	7.4
11-20	45	80	125	37.1
21-30	5	90	95	28.2
31-40	15	18	33	9.8
41-50	10	19	29	8.6
51-60	14	16	30	8.9
Total	94	243	337	100.0

Among 337 photodermatoses patients, males and females were 94(27.8%), 243(72.1%) respectively. females outnumbered males by 2.5 times. Most of the photodermatoses patients belong to age group 11-20(37.1%).

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Table 2: Relation to occupation

Occupation	Male	Female	Total	Percentage
Agriculture	38	56	94	27.9
Housewife	0	78	78	23.1
Students	22	42	64	19.0
Other occupation	34	67	101	30.0
Total	94	243	337	100.0

Among various occupations, patients doing agriculture work were most affected 27.9%, followed by housewives 23.1% and students 19%.

Table 3: Area wise distribution of patients

Area	Male	Female	Total	Percentage
Rural	58	170	228	67.7
Urban	36	73	109	32.3
Total	94	243	337	100.0

Majority of the patients belong to rural area 228 (67.7%) as shown in Table 3.

Table 4: Clinical variant

Clinical types	Male	Female	Total	Percentage
Polymorphic light eruption	56	141	197	58.4
Actinic prurigo	61	12	73	21.7
Solar urticaria	17	12	29	8.7
Chronic actinic dermatitis	17	6	23	6.8
Lupus erythematous	3	12	15	4.4
Total	153	183	337	100.0

Among the various clinical variants of photodermatoses polymorphic light eruption was the most common one 58.4%, followed by actinic prurigo and solar urticaria which were 21.7%and 8.7% respectively.

Table 5: Distribution of lesions

Site involved	Male	Female	Total	Percentage
Face	42	111	153	45.4
Extensor aspect of forearm and sides and back of the neck	52	132	184	54.6
Total	94	243	337	100.0

Extensor aspects of the forearm and sides and back of the neck were the most common affected site 54.6% followed by face 45.4%.

Table 6: Colour of the lesions

Colour of the lesions	No. of patients	Percentage
Erythematous	79	23.4
Hyperpigmentation	109	32.3
Hypopigmentation	47	13.9
Skin coloured	48	14.2
Hyperpigmentation + skin colour	54	16.0
Total	337	100

Hyperpigmentation was the most common colour among the photodermatoses 32.3%, followed by erythematosus, mixed colour i.e. hyperpigmentation + skin colour, skin coloured and were 23.4%, 16.0% and 14.2% respectively.

Table 7: Duration of exposure to sunlight

Duration of exposure	No of patients	Percentage
< 1 hour	45	13.4
1 – 2 hours	64	19.0
2 – 3 hours	52	15.4
3 – 4 hours	40	11.9
4 – 5 hours	42	12.5
5– 6 hours	38	11.3
> 6 hours	56	16.6
Total	337	100

Most of the patients had sun exposure for around 1-2 hours (19%) followed by duration of > 6 hours which were 16.6%.

Discussions

Sun exposure at optimized amount is beneficial to human health by inducing vitamin D production, but excess exposure to sunlight can be detrimental to health by inducing various immunological conditions called photodermatoses and even worse, it may increase the risk of skin cancer. There is a paucity of data regarding photodermatoses in this part of the country. Due to the tropical climate and overall rise in global temperature cases of photodermatoses are increasing[6].

In our study, out of 337 patients female outnumbered male by 2.5 times. It may be due to fairer skin and a higher risk of immunological disorders in female population. A recent study shows that 17 β-estradiol in female inhibits UVR induced suppression of contact hypersensitivity orchrasted by the release of immunosuppressive cytokine (IL-10) from keratinocytes [9]. Nevertheless, it is common knowledge that concern and awareness regarding skin diseases are higher in females than their male counterparts. This finding is similar to other studies done by Ros AM et al [10] and V.K Sharma et al [11]. In our study most of the photodermatoses patients belong to the age group 11-20(37.1%) it may be due to increased time spent at the playground for sports activities. Among various occupations, patients with agricultural work like farmers were affected by 27.9%, followed by housewives at 23.1%. This finding suggests that not only the sun but also heat from an open fire while cooking food could also contribute to photodermatoses, especially in housewives. This finding is similar to the studies done by Sharma and Basnetet al [12]and Nagaraju GV et al [13]. The majority of the patients were from rural area 228 (67.7%) due to the unique location of our hospital setup and patients with occupations like construction workers and daily labourers were most affected. Among the various clinical variants of photodermatoses, polymorphic light eruption was the most common 58.4%, followed by actinic prurigo and solar urticaria which were 21.7%and 8.7% respectively. Various clinical types of PMLE have been described in the literature, like papular, plaque, papulo-vesicular, urticarial, vesiculo-bullous, hemorrhagic, and eczematous. In our study, 44% of patients presented with a papular variant, followed by plaque variant (15%). This finding is in concordance with the study done by Prasad et al Papular (41%) & Plaque type (34%)[14]. In Sharma et al study papular variant were 54.09% while macules were 19.55%[15]. Few authors claim that PMLE is inherited as an autosomal dominant gene with reduced penetrance. Study done by Ross & Millard showed the heritability of PMLE varies from 6.25% to 12%[10, 16], while study by Orr & Brit suggests an autosomal dominant trait with incomplete penetrance[17]. PMLE in these cases is difficult to ascertain because different members of the family work in different environments with varying degrees of sun exposure. Extensor aspects of the forearm, sides, and back of the neck were the most common affected sites due to photodermatoses 54.6% followed by the face 45.4%. It is a fact that the forearm, especially the extensor aspect, receives maximum sunlight during travel or any other activity. Face is less commonly affected due to vertical orientation. This finding is in concordance with Prasad et al (forearm is commonest)[14]& Gonzalez et al (neck is commonest)[18]. Itching was the most common symptom, affecting 45% of the study population. 30% of the patients were asymptomatic. The above finding is comparable to the study done by Sharma et al & Prasad et al where pruritus was the most common presentation in 68.63% & 54% respectively[14, 15]. Malaise and headache were noted in 6.8% of study population in Sharma et al & 6% in Prasad et al. similar complaints were not noted in any of our study populations, which may be due to the milder form of the disease in our locality[14, 15].

Hyperpigmentation was the most common color among the photodermatoses, at 32.3%, followed by erythematosus, mixed color, i.e., Hyperpigmentation + skin color, skin colored was 23.4%, 16.0%, and 14.2%, respectively. It may be due to the Fitzpatrick skin type of the Indian populations that most of the patients had sun exposure for 1-2 hours (19% followed by duration of > 6 hours and 2 – 3 hours which were 16.6% and 15.4% respectively. This finding could be due to hardening effects which occur due to longer exposure to sun light during working hours and prevent photodermatoses from developing; hence, patients with shorter exposure times are more prone to photodermatoses[6].

It was also noted that patients with involvement of two sites of the body parts were more common than others. Sunscreen usage among photodermatoses patients reduced the lesions and prevented their recurrences in most of the patients. A study done by Lehman &Schwar confirms the above fact[3].

Most of the patients consulted in our OPD after 3rd or 4th episodes of the disease, may be due to a milder symptom of the disease, a lack of noticing the lesion at the right time, and the use of alternative medication to treat the lesion. Patients should be educated about the necessary steps to be taken to avoid the triggers, and measures like proper application of sunscreen, wearing full-sleeve clothes, a broad brim hat, and an umbrella should be emphasized.

Limitations of the Study

It was a descriptive cross sectional study in a tertiary care hospital with limited access. This was a single center study with a lack of complete information. Follow up studies with a large sample size may be carried out to reveal the actual scenario of the disease.

Conclusion

In our study, most of the patients belonged to the age group of 11-20 years with a female preponderance (2.5:1). Among the photodermatoses patients, the majority of them were agriculturists (27.9%) and from rural background (67.7%). In clinical types, polymorphic light eruption was the most common finding (58.4%) and the lesions were mostly distributed over the extensor aspects of the forearm and sides and back of the neck (54.6%). The majority of the patients (19%) developed photodermatitis after being exposed to sunlight for around 1-2 hours. Proper awareness and information regarding the disease and appropriate precautionary measures may be taken to reduce the incidence and recurrence of the disease.

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