Prevalence and Trend of Photodermatoses in Thailand: A 16-year Retrospective Study at Siriraj Hospital

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ABSTRACT

Objective: Photodermatoses are a group of cutaneous disorders with abnormal reactions triggered by exposure to sunlight. Previous studies reported varying photodermatoses prevalence in Caucasians and African-Americans; however, it was seldom reported in the Asian population. The aim of our study was to determine the prevalence, clinical characteristics and trend of photodermatoses in Thailand.

Materials and Methods: A retrospective chart review was performed at the Faculty of Medicine Siriraj Hospital, Mahidol University using diagnoses from the International Classification of Disease (ICD), Tenth Revisions codes, between January 2005 and September 2021.

Results: A total of 561 patients with definite diagnoses of photodermatoses were identified. The prevalence of photodermatoses in the outpatient dermatology clinic was 3 cases per 1,000. The most common photodermatoses were chemical and drug-induced photosensitivity (39.4%), followed by immunologically-mediated photodermatoses (30.1%), photo-aggravated dermatoses (29.4%) and genophotodermatoses (1.1%). Overall phototesting was performed in 276 cases (49.2%). In our study, some photodermatoses had unique clinical characteristics including a pinpoint popular variant of polymorphous light eruption and adult-onset actinic prurigo. Over 16 years, the trend of patients being diagnosed with photodermatoses has continued to rise gradually with an increment of 1.67 times.

Conclusion: Photodermatoses are uncommon in Thailand. Some photodermatoses have distinctive clinical features in Asian populations. The trend of photodermatoses in Thailand is continually rising, reflecting an increase in physicians' awareness and knowledge of these cutaneous conditions.

Keywords: Photodermatoses; drug-induced photosensitivity; immunologically-mediated photodermatoses; photo-aggravated dermatoses; genophotodermatoses; polymorphous light eruption (Siriraj Med J 2023; 75: 106-114)

INTRODUCTION

Photodermatoses are a group of skin disorders caused by exposure to sunlight. Photodermatoses are generally classified into four categories: immunologically-mediated photodermatoses, chemical and drug-induced photosensitivity, photoexacerbated dermatoses, and genophotodermatoses.[1-3] Immunologically-mediated photodermatoses are further sub-divided into five diseases: polymorphous light eruption (PMLE), actinic prurigo (AP), chronic actinic dermatitis (CAD), solar urticaria (SU), and hydroa vacciniforme (HV). The pathophysiology of these diseases is still unclear, but it varies depending on different immune dysregulation. Most of these diseases require phototesting to confirm the diagnosis.[1,3,4] Chemical

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and drug-induced photosensitivity can be triggered by both external and internal causes. The external causes can be further split into photoallergic and phototoxic reactions. Moreover, various exogenous chemical agents can lead to phytophotodermatitis and photoallergic contact dermatitis. An example of photodermatoses caused by endogenous agents is porphyrias, which are caused by an abnormal heme biosynthetic pathway.[1,3] Meanwhile, photoexacerbated dermatoses such as photoexacerbated eczema, photoexacerbated atopic dermatitis, systemic lupus erythematosus, autoimmune connective tissue diseases, vesiculobullous diseases, HIV photosensitivity, are the main groups of photodermatoses.[1] Last but not least, genophotodermatoses are rare genetic disorders that cause severe photosensitivity and other manifestations, and examples include xeroderma pigmentosum (XP), Bloom syndrome, and Rothmund–Thomson syndrome.[1,2]

To diagnose photodermatoses, the history, clinical presentation, phototesting, and laboratory investigations (e.g. porphyrins, lupus serology) are necessary in each individual case. Phototesting can help in evaluating the degree of photosensitivity and the specific wavelength which elicits a cutaneous response in an individual patient. Moreover, some cases also require a photoprovocation test, photopatch test and skin biopsy.

According to the previous studies, genetics, race, skin phototypes and climate are the factors associated with different prevalence of photodermatoses.[5-9] In Europe, the prevalences of immunologically-mediated photodermatoses is reported to be about 10-20% in PMLE,[10] 16.5 cases per 100,000 for CAD,[11] 3.9 cases per 100,000 for solar urticaria,[11] and 3.3 cases per 100,000 for actinic prurigo.[11] Most of previous studies have been conducted on the African-American and Caucasian populations.[7-9,11] Proportion of photodermatoses was also different between races. PMLE has more prevalence in Africans-Americans and Caucasians compared to other races. Drug-induced photosensitivity and photo-aggravated dermatoses are more prevalent in Caucasians.[9] However, the research that looks at the overall proportion of photodermatoses in the Thai population is still limited. Determining the prevalence, clinical features, and trend of photodermatoses in Thailand was the purpose of this study.

MATERIALS AND METHODS

This study was approved by the ethics committee of the Siriraj Institutional Review Board (COA no. Si 909/2021). A 16-year retrospective chart review was performed at the Faculty of Medicine Siriraj Hospital, Mahidol University, a tertiary care hospital in Thailand, using diagnoses from the International Classification of Disease (ICD), Tenth Revisions codes related to photodermatoses between January 2005 and September 2021. In our study, cases of photodermatoses were selected if the diagnosis included one of the following ICD-10 codes: E52 (Niacin deficiency [pellagra]), E80 (Disorders of porphyrin and bilirubin metabolism), E80.0 (Hereditary erythropoietic porphyria), E80.1 (Porphyria cutanea tarda), E80.2 (Other porphyria), L29.9 (Actinic prurigo), L56.0 (Drug phototoxic response), L56.1 (Drug photoallergic response), L56.2 (Photocontact dermatitis [berloque dermatitis])., L56.3 (Solar urticaria), L56.4 (Polymorphous light eruption), L56.8 (Photoallergic contact dermatitis), L57.8 (Chronic actinic dermatitis), Q82.1 (Xeroderma pigmentosum), Q82.88 (Other specified congenital malformations of skin) and Q87.1 (Congenital malformation syndromes predominantly associated with short stature). All medical records were manually reviewed. The data were collected and included patients' clinical chart data upon further investigations correlated with the ICD code. Phototesting with or without photoprovocation test was required in the diagnoses of immunologically-mediated photodermatoses. Photopatch test was required in the diagnosis of photoallergic contact dermatitis. Diagnosis of porphyrias was made based on clinical presentations and porphyrin profiles. Other photodermatoses can be diagnosed by clinical presentation, phototesting with or without photoprovocation. The exclusion criteria were patients whose clinical history and examination were not suggestive of photodermatoses. Demographic data including age, sex, age onset of skin lesions, skin phototype, photosensitizing agents, area of skin involvement and characteristics of skin lesions were collected. Additional investigations such as phototesting, photoprovocation test, photopatch test, skin biopsy and laboratory investigations were also recorded.

Phototesting by determination of minimal erythema dose (MED) for UVA and UVB was performed on the lower back areas or the buttocks. UVA radiation was delivered by UVA 700 L (Herbert Waldmann GmbH & Co. KG, Villingen-Schwenningen, Germany); UVB radiation was delivered by a bank of UV 802 L (Herbert Waldmann GmbH & Co. KG, Villingen-Schwenningen, Germany); and visible light delivered for 30 minutes by a Kodak Carousel S-AV 2020 projector (Kodak AG, Stuttgart, Germany). For the visible light testing, a glass of water was placed in front of the projector to absorb infrared. Another visible light machine included the Fiber-Lite Mi-152 High Intensity Illuminator (Dolan-Jenner industries, Boxborough, MA, USA). An IL1700 radiometer (International light Inc. Newburyport, MA, USA) was used to measure UVA and UVB irradiance.

Minimal Erythema Dose was defined as the lowest UV dose which produced perceptible erythema reading at 24 hours after UVA and UVB irradiation. The result will be interpreted as UVA and UVB photosensitivity if the MED-UVA < 30 J/cm^2 and MED-UVB < 50 mJ/cm^2. The photoprovocation test was done to reproduce skin lesions if the phototest was negative but still clinically related to photodermatoses using an energy of 60-100 J/cm^2 of UVA and 1.5 times MED of UVB for 3 consecutive days. Results of the photoprovocation test were measured at 24, 48 and 72 hours. Our photoallergen set used for photopatch testing in this study was developed in accordance with previous literature of photoallergic contact dermatitis. It is mainly composed of ultraviolet filters, topical medications, fragrances and preservatives. Both sets were removed after 48 hours but one set was irradiated with UVA 10 J/cm^2. Results were interpreted at 48 and 96 hours.

Statistical analysis

Descriptive analysis was used for demographic data presented as frequency and percentage, or as a mean with standard deviation (SD) and median with interquartile range (IQR). Statistical analysis was carried out using a statistical software (SPSS version 18.0; SPSS Inc., Chicago, USA).

RESULTS

A total of 4,371 medical records matching ICD10 codes from the dermatology clinic were collected and a chart review was performed. Our study confirmed the diagnosis of 561 patients with photodermatoses out of a total of 189,806 cases who had visited the dermatology clinic from 2005-2021. The calculated prevalence of photodermatoses in our hospital was 3 cases per 1,000. Of the 561 cases, the majority were females (n=335, 59.7%). The mean age ± SD and mean age to onset ± SD of photodermatoses was 49.1±17.8 years and 47.9±18.4 years, respectively. The median disease duration was 4 months (0.75, 12.0). The majority of patients had skin type IV and V. The most frequently affected areas in photodermatoses were the extensor surface of the upper extremities (n=362, 64.8%), face (n=255, 45.5%) and the V-shape of the neck (n=231, 41.3%). Meanwhile, papules and plaques (n=297, 52.9%), macules and patches (n=254, 45.3%) and wheals and flares (n=29, 5.2%) were the most commonly reported. Examples of photo-distributed lesions are shown in Fig 1. Overall, phototesting, photoprovocation, and photopatch tests were conducted in 276 (49.2%), 37 (6.6%) and 43 (7.7%) patients, respectively. Of the 276 patients who underwent phototesting, positive results were seen in 148 (53.6%) patients. Most of the cases with positive phototesting results were diagnosed with CAD (n=53, 35.8%), SU (n=27, 18.2%) and AP (n=17, 11.5%). The details of photodermatoses, phototesting, photoprovocation, and photopatch test results are summarized in Table 1.

Immunologically-mediated photodermatoses

Of 561 photodermatoses patients, 169 (30.1%) patients were diagnosed with immunologically-mediated photodermatoses. CAD (n=67, 11.9%) was the most prevalent followed by AP (n=38, 6.8%), PMLE (n=35, 6.2%) and SU (n=29, 5.2%). No cases of HV were found.

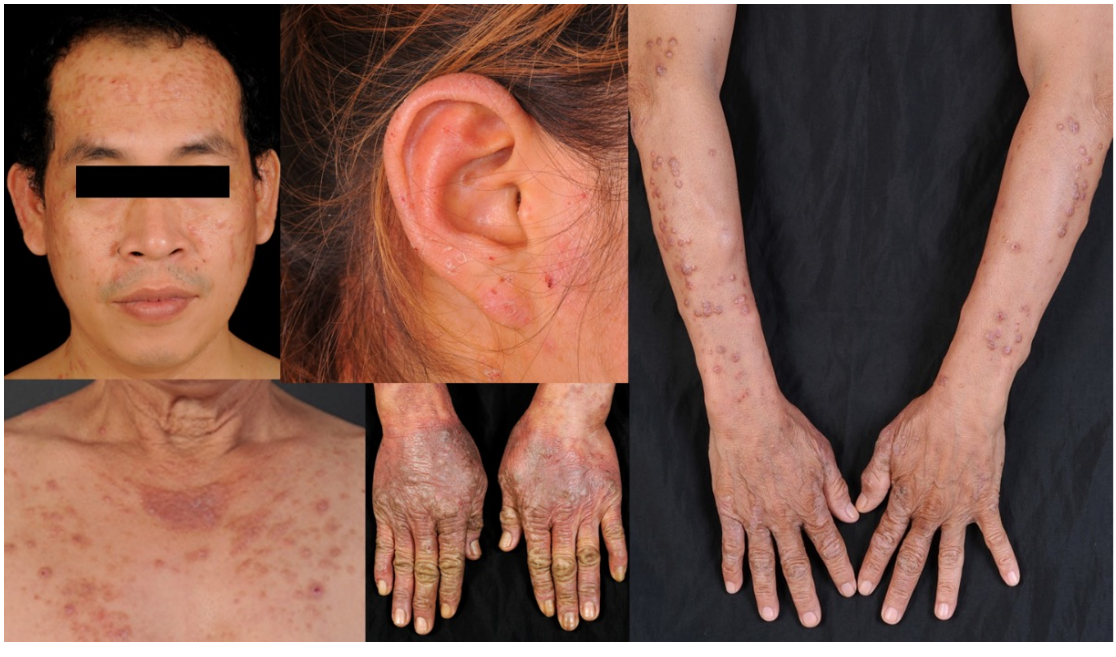

Fig 1. Skin lesions on photodistributed areas.

TABLE 1. Prevalence and photobiological characteristics of each photodermatoses (N=561).

Diagnosis	N (%)	Phototesting (N)					Photoprovocation test (N)				Photopatch test (N)	
		Done	Positive	Positive UVA	Positive UVB	Positive UVA and UVB	Done	Positive UVA	Positive UVB	Positive UVA and UVB	Done	Positive
Immunologically-mediated photodermatoses	169 (30.1%)											
Chronic actinic dermatitis	67 (11.9%)	67	53	20	15	18	1	1	0	0	6	0
Actinic prurigo	38 (6.8%)	37	17	11	2	4	15	7	1	5	1	0
Polymorphous light eruption	35 (6.2%)	20	8	6	2	0	8	3	1	3	1	0
Solar urticaria*	29 (5.2%)	29	27*	7	0	0	-	-	-	-	-	-
Chemical and drug-induced photosensitivity	221 (39.4%)											
Phytophotodermatitis	94 (16.8%)	-	-	-	-	-	-	-	-	-	-	-
Drug-induced photosensitivity	87 (15.5%)	19	11	7	1	3	1	0	0	0	2	0
Photoallergic contact dermatitis	25 (4.5%)	12	5	4	1	0	1	0	0	0	25	25
Porphyrias	15 (2.7%)	1	1	1	0	0	1	1	0	0	-	-
Porphyria cutanea tarda	12 (2.1%)	-	-	-	-	-	-	-	-	-	-	-
Erythropoietic protoporphyria	1 (0.2%)	1#	1	1	0	0	1	1	0	0	-	-
Hepatoerythropoietic porphyria	1 (0.2%)	-	-	-	-	-	-	-	-	-	-	-
Variegate porphyria	1 0.2%)	-	-	-	-	-	-	-	-	-	-	-
Photoexacerbated dermatoses	165 (29.4%)											
Photoexacerbated dermatoses	109 (19.4%)	74	12	7	3	2	7	0	0	0	6	0
Eczema	53 (9.4%)	50	4	2	0	2	5	0	0	0	4	0
Atopic dermatitis	11 (2.0%)	9	3	2	1	0	-	-	-	-	1	0
Dermatomyositis	11 (2.0%)	4	1	0	1	0	-	-	-	-	1	0
Others	34 (6.1%)	11	4	3	1	0	2	0	0	0	-	-
Other unspecified photosensitive dermatitis and photosensitivity	56 (10.0%)	16	13	7	3	3	3	0	0	0	2	0
Genophotodermatoses	6 (1.1%)											
Xeroderma pigmentosum	4 (0.7%)	1	1	0	1	0	-	-	-	-	-	-
Bloom syndrome	1 (0.2%)	-	-	-	-	-	-	-	-	-	-	-
Cockayne syndrome	1 (0.2%)	-	-	-	-	-	-	-	-	-	-	-

*Visible light testing was positive in 9 cases of solar urticaria. Visible light testing and UVA were positive in 11 cases of solar urticaria.
Visible light testing was positive in Erythropoietic protoporphyria

Most of the CAD patients were male (n=55, 82.1%) with a mean age of 57.8±13.0 years. The disease duration before diagnosis varied from one month to 20 years. The upper extremities and face were mostly affected with lesions such as eczematous plaques and papules. Phototesting in CAD showed an abnormal MED in 53 (79.1%) out of 67 patients. Of this group, 20 (37.7%) cases had low MED to UVA, 15 (28.3%) cases had low MED to UVB, and 18 (34.0%) cases had low MED to both UVA and UVB. Other negative phototesting cases can be explained by the early or mild disease. In our institute, visible light is not routinely tested for patients suspected of CAD; however, visible light may be the cause. (Table 1)

AP was the second most prevalent diagnosis of 38 cases. The male to female ratio was 1.9:1, with a mean age of 53.2±11.7 years. The median duration of AP was 1 year (0.5, 2.5). All cases were adult-onset. Clinical presentations were chronic pruritic nodules on faces, extensor surfaces of forearms, and dorsum of hands. None of our cases had cheilitis and conjunctivitis. Of all 38 AP cases, 17 (44.7%) patients had abnormal MED, 11 (28.9%) patients had reduced MED to UVA, 2 (5.3%) patients had reduced MED to UVB and 4 (10.5%) cases had reduced MED to both UVA and UVB. Photoprovocation with UVA and UVB was carried out in 15 patients, with a positive result in 13 (86.7%) cases: 7 (46.7%) patients had UVA positive, 1 (6.7%) patient had UVB positive and 5 (33.3%) patients had both UVA and UVB positive. A high yield was observed on day 3 of the provocation test in both UVA and UVB.

PMLE was the third most prevalent type of immunologically-mediated photodermatoses. The female to male ratio was 4:1, and the mean age was 42.1±14.3 years. The median duration of disease before the diagnosis was 6 (2, 27) months. Lesions were mostly small papules on the extensor surface of the upper extremities compatible with a pinpoint papular variant. Phototesting was carried out in 20 patients and positive results were reported in 8 (40.0%) cases. Among 8 positive phototesting cases, a low MED to UVA and low MED to UVB were observed in 6 (75.0%) and 2 (25.0%) patients, respectively. Further photoprovocation test was done in 8 cases with positive results in 7 (87.5%) cases. Another 15 patients were diagnosed with PMLE clinically.

SU was noted in 29 patients. Of these, 65.5% were female with a mean age ± SD of 32.2±12.0 years, and the median duration of symptoms before diagnosis was 2 (1,4) years. Phototesting with UVA, UVB and visible light was performed and revealed wheals and flares in 27 (93.1%) patients. Of all 29 SU cases, visible light alone and UVA alone were positive in 9 (31.0%) patients and 7 (24.1%) patients respectively, while positive results from both visible light and UVA were noted in 11 (37.9%) patients.

Chemical and drug-induced photosensitivity

Chemical and drug-induced photosensitivity were the most prevalent among the four photodermatoses groups (n=221, 39.4%). These included drug-induced photosensitivity (n=87, 15.5%), phytophotodermatitis (n=94, 16.8%), photoallergic contact dermatitis (n=25, 4.5%) and porphyrias (n=15, 2.7%).

Of the 87 patients diagnosed with drug-induced photosensitivity, phototesting was performed in 19 (21.8%) patients. Culprit drugs responsible for photosensitivity were simvastatin, fenofibrate, piroxicam, thiazides, amiodarone and losartan which were confirmed with abnormal MED in phototesting in 11 patients. None of the patients underwent an oral drug challenge test.

Photoallergic contact dermatitis was reported in 25 (4.5%) patients. A photopatch test was done in all cases and common responsible agents were benzophenone-3 (n=5, 20%) and fragrance mix I (n=3, 12%). The third most common photoallergens were balsam of peru, cobalt, ethylhexyl salicylate, homosalate, PABA, 2-(4-Diethylamino-2-hydroxybenzoyl)-benzoic, 3,4-methylbenzyliden (camphor) which were found in one case each.

Fifteen patients were also diagnosed with porphyrias, based on a clinical, skin biopsy, immunofluorescence and biochemical investigation. Porphyria cutanea tarda (PCT) was reported in 12 patients, followed by a single case of erythropoietic protoporphyria (EPP), hepatoerythropoietic porphyria (HEP) and variegate porphyria.

Photoexacerbated dermatoses

Photoexacerbated dermatoses were reported in 165 (29.4%) patients. Details of each dermatosis are shown in Table 1. Other photoexacerbated dermatoses include lupus erythematosus, T-cell proliferative disorder, HV-like lymphoproliferative disease, actinic granuloma, erythema multiforme-induced photosensitivity, HIV- induced photosensitivity, lichen planus pigmentosus, overlapping syndrome, pseudoporphyria and undifferentiated connective tissue disease. The patients initially presented with abnormal skin lesions on sun-exposed areas or photosensitivity and were referred for photodermatology consultation. An intensive study of their history, physical examination, collection of laboratory data (e.g. porphyrin plasma scan, lupus serology) and photobiological testing was performed for each patient. Phototesting was conducted in 90 patients with some showing abnormal MED. There were some patients whose diagnosis could not be confirmed; however,

skin lesions were presented on sun-exposed areas and associated with sunlight exposure so a diagnosis of other unspecified photosensitive dermatitis and photosensitivity was assigned.

Childhood photodermatoses and genophotodermatoses

In this study, there were 18 patients aged below 18 years, and 12 (66.7%) of them were females. In this childhood group, phytophotodermatitis (33.3%) was the most frequent diagnosis. XP was noted in four patients while Cockayne syndrome and Bloom syndrome were noted in one patient each. EPP was also diagnosed in one (5.6%) patient.

Trend of photodermatoses

The trend of photodermatoses in our dermatology outpatient clinic is shown in Fig 2. Over the past 16 years, the number of patients diagnosed with photodermatoses, except for genophotodermatoses, has risen gradually. The overall increment between 2005 to 2021 is about 1.67 times based on the trend line. The incidence of photodermatoses was highest in 2019, with a total of 60 cases. The number of cases has fallen during 2020-2021 due to the COVID-19 pandemic.

DISCUSSION

The authors conducted a large retrospective photodermatoses study over 16 years. We confirmed diagnosis in 561 patients and found a low prevalence of 0.3% in our outpatient dermatology clinic at a tertiary care hospital in Thailand. Our study demonstrates a high prevalence of chemical and drug-induced photosensitivity (39.4%), followed by immunologically-mediated photodermatoses (30.1%), photoexacerbated dermatoses (29.4%) and a few cases of genophotodermatoses (1.1%). A comparison of the prevalence of each photodermatosis reported is summarized in Table 2.

The overall prevalence of photodermatoses in previous studies of Asians, Caucasians and African-Americans was congruent.[7] However, a higher proportion of PMLE was noted in African-Americans, while higher proportions of photoallergic contact dermatitis, phototoxic drug eruptions, phytophotodermatitis, porphyrias, and solar urticaria were noted in Caucasians.[9] The mean age and mean age to onset in our study were 42 years, which is similar to previous reports.[7]

In this study, phytophotodermatitis was the most prevalent in the chemical and drug-induced photosensitivity group. This can be explained by common plant-based chemicals called furocoumarins found in Thai recipes e.g. lime, and bergamot. The skin lesions usually develop when patients contact with plant chemicals and then sunlight. Drug-induced photosensitivity was found in 15.5% of all patients, which is similar to other studies from Singapore and the United States, which reported a higher prevalence in Caucasians compared to darker-skinned patients.[6,7,12] Various drugs such as fluoroquinolones, tetracyclines, thiazides, retinoids, diltiazem and nonsteroidal anti-inflammatory drugs are common oral medications that lead to drug-induced photosensitivity.[13] Similar to the

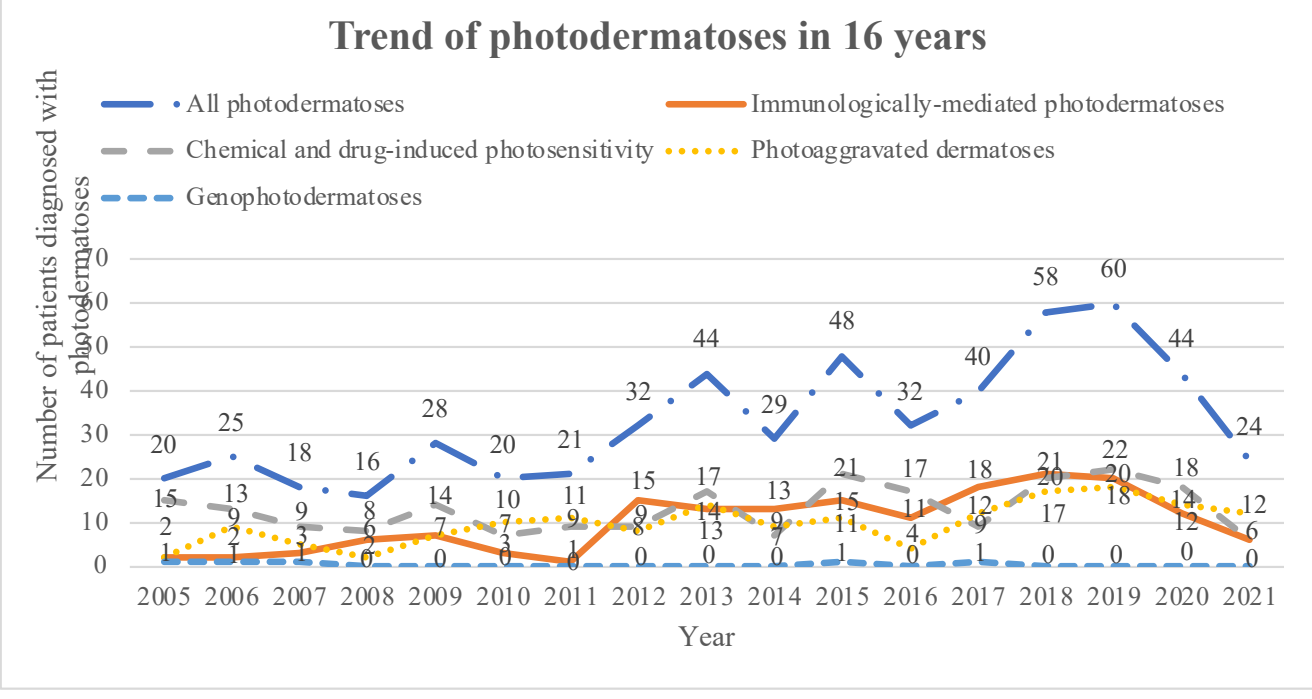

Fig 2. The trend of photodermatoses from 2005 to 2021.

TABLE 2. Prevalence of photodermatoses in previous studies.

Diagnosis	Our study	Fotiades et al.[13]	Khoo et al.[11]	Wong and Khoo[6]	Nakamura et al.[7]		Hamel R et al.[9]		
Country	Thailand	United States	Singapore	Singapore	United States		United States		
Study period	2005-2021	1986-1993	1991-1993	2000-2001	2004-2012		2006-2016		
Number of cases (n)	561 (Asians)	203	152	141	138 (AAF)	63 (Caucasians)	572 (AAF)	378 (Caucasians)	130 (Other races)
Immunologically-mediated photodermatoses (%)									
Polymorphous light eruption	6.2	26	13	25	86.2	54	74.3	43.9	62.3
Chronic actinic dermatitis	11.9	17	5	14	2.9	1.6	4.4	2.9	1.5
Actinic prurigo	6.8	NR	4	4	NR	NR	0	0.8	0.8
Solar urticaria	5.2	4	5	6	0.7	1.6	0.7	3.2	3.8
Hydroa vacciniforme	0	NR	NR	NR	NR	NR	0	0.5	1.5
Chemical and drug-induced photosensitivity (%)									
Porphyrias	2.7	NR	NR	NR	0	7.9	0.3	8.2	2.3
Drug-induced photosensitivity	15.5	7	11	13	0.7	15.9	2.8	13.0	6.2
Phytophotodermatitis	16.8	NR	NR	NR	0	6.3	0	2.1	2.3
Photoallergic contact dermatitis	4.5	8	3	4	0	1.6	1.2	3.7	3.8
Photoexacerbated dermatoses	29.4	NR	32	23	9.4	11.1	15.9	20.9	14.6
Genophotodermatoses	1.1	NR	3	0	NR	NR	NR	NR	NR

Abbreviations: NR= Not reported, AAF= African-Americans

previous studies, drugs responsible for photosensitivity in our study were simvastatin, fenofibrate, and thiazides. The diagnosis of drug-induced photosensitivity was mainly based on the history of suspected drug intake, photodistributed rash, and improvement of rash after drug discontinuation. Only 19 patients underwent phototesting as a result, and 7 of them tested positive for UVA, 1 for UVB, and 3 for both UVA and UVB.

Regarding immunologically-mediated photodermatoses, CAD was the most common disorder detected in 11.9% of all cases. The prevalence of Thai CAD corresponded with other studies.[14] CAD was commonly seen in males (82.1%), with a mean age of 58 years. AP was the second most common immunologically-mediated photodermatoses. All cases were adult-onset AP correlated with previous studies that adult-onset AP was more common in Asians while AP in American individuals usually started in childhood.[15,16] Contrast to the classic AP, cheilitis and conjunctivitis are rare in adult-onset AP. Patients with AP in our study were more likely to have normal MED similar to a study by *Akaraphanth R et al.*[15] In order to confirm the diagnosis, a photoprovocation test should be carried out. Our study showed lower PMLE percentages than those in earlier studies.[6,7,9,12,14] This can be explained by the fact that Thailand experiences a lot of sunlight throughout the year, which can cause skin hardening. Diagnosis of PMLE was mainly based on history and clinical diagnoses and not referred for phototesting. Clinical characteristics of PMLE in our study were tiny papules which were similar to pinpoint papular variant of PMLE. This was different from erythematous papules and plaques, a classical prototype of PMLE in fair-skinned populations.[17] Moreover, the mild symptoms of PMLE could be overlooked by physicians. Prevalence of SU was diagnosed in 5.2%, which is similar to the values previously reported.[6,12] Our study demonstrated that visible light spectrum and UVA were common in SU, making physical photoprotection or tinted sunscreen essential components of the therapy.

Photoexacerbated dermatoses were the third most prevalent group in our study. Most cases were photoaggravated eczema, photosensitive atopic dermatitis, dermatomyositis, lupus erythematosus and other unspecified photosensitive dermatitis and photosensitivity. Photosensitive atopic dermatitis (PhAD) was detected in 11 patients. Nine patients also underwent phototesting, one patient reported an abnormal response to UVB and two patients reported an abnormal response to UVA. PhAD is an uncommon condition and seems to affect women more than men. These patients present photodistributed rash and fulfilled the criteria of atopic dermatitis. Photosensitivity is also often observed during summer, during exposure to artificial UV phototherapy or may appear after diagnosis of AD.[18] To confirm the diagnosis, photoprovocation can be performed and may induce papular or eczematous reactions.[18]

Genophotodermatoses are rare conditions with an incidence of 2.3 per million in Western Europe.[19] However, we had four cases of XP, one case of Cockayne syndrome and one case of Bloom syndrome. Corresponding to a study by *Khoo et al* and *Wong and Khoo*, our study demonstrated a low percentage of genophotodermatoses compared to other groups of photodermatoses.[6,12]

The number of patients diagnosed with photodermatoses varied each year. Notwithstanding, the overall trend of photodermatoses in our study showed a steady increase which corresponded with *Nassan H et al's* study[20], except in 2020-2021 when the diagnosis of photodermatoses declined due to the COVID-19 pandemic.

Our study had some limitations. First, this was a retrospective study in which some important data such as Fitzpatrick skin phototype and patients' current medication was missing. Furthermore, some patients who were clinically suspected to have photodermatoses were excluded because phototesting was not performed. Additionally, the ICD coding approach might not be entirely covered. Patients with photodermatoses who have ICD10 codes other than those for photodermatoses would not be included in this study. Last but not least, as the majority of patients in our study were sent to this single-center tertiary care facility, the prevalence of photodermatoses may differ from that of the general Thai community. To estimate the prevalence of photodermatoses, comprehensive national data that have been integrated from every Thai hospital are required.

CONCLUSION

In Thailand's general dermatology practice, photodermatoses are infrequent. Our study showed larger proportions of drug-induced photosensitivity and phytophotodermatitis, compared to immunologically-mediated photodermatoses and photoaggravated dermatoses. Some photodermatoses have distinctive clinical features in Asian populations. Recent trends in the diagnosis of photodermatoses suggest that either the prevalence of these diseases is actually rising or that physicians are becoming more aware of and knowledgeable about these photodermatoses.

Conflict of interests: All authors do not have any conflicts of interest or financial support to declare.

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