

### Introduction

Pustular psoriasis (PP) is an uncommon subtype of psoriasis with distinct genetic features and clinical phenotypes. Patients tend to experience frequent flares and significant morbidity.<sup>1</sup> This study aims to determine the clinical characteristics, comorbidities and treatment of PP in Malaysia.

### Methods

This was a retrospective cross-sectional study using the data obtained from Malaysian Psoriasis Registry (MPR) from 2007-2018.

### Results

- Of the 21735 patients, 148 (0.7%) had pustular psoriasis. Of these, 95 had generalised pustular psoriasis (GPP) and 53 had localised PP (Table 1).
- Fifteen patients (10.1%) belonged to the paediatric group ( $\leq 18$  years).

**Table 1: Demographic and clinical characteristics of pustular psoriasis patients**

Demographic and clinical characteristics		GPP n=95 (%)	Localised PP n=53 (%)	p-value
Age of onset (years)	Mean (SD)	29.46±18.43	35.7±17.62	0.054
	Min, Max	1, 84	8, 74	
Gender	M:F	1:2.3	1:1.9	0.667
Family history of psoriasis		13 (13.7)	6 (11.3)	0.629
Comorbidities	<sup>a</sup> Dyslipidemia	21 (22.8)	13 (25)	0.768
	<sup>b</sup> Hypertension	21 (22.6)	14 (26.9)	0.558
	<sup>c</sup> DM	18 (19.1)	10 (19.2)	0.99
	<sup>d</sup> IHD	3 (3.3)	1 (1.9)	0.639
	<sup>e</sup> CVA	1 (1.1)	1 (1.9)	0.68
<sup>f</sup> Body surface area (BSA) (%)	<5	22 (29.7)	27 (62.8)	N/A
	5-10	13 (17.6)	11 (25.6)	
	11-90	26 (35.1)	5 (11.6)	
	>90	13 (17.6)	0	
<sup>g</sup> Body mass index (BMI) (kg/m <sup>2</sup> )	<25	42 (50)	22 (46.8)	N/A
	$\geq 25$ (obese)	42 (50)	25 (53.2)	
<sup>h</sup> Face and neck involvement		55 (59.1)	14 (27.4)	<0.001
Nail disease		50 (52.6)	30 (56.6)	0.642
<sup>i</sup> Scalp involvement		66 (71.7)	22 (42.3)	0.001
Psoriatic arthropathy		10 (10.5)	5 (9.4)	0.833
<sup>j</sup> DLQI >10		40 (49.4)	24 (48)	0.878
<sup>k</sup> Severe psoriasis		47 (72.3)	21 (52.5)	0.039

M-male ; F-female; <sup>a</sup>GPP n=92, localised PP n=52; <sup>b</sup>GPP n=93, localised PP n=52; <sup>c</sup>DM-diabetes mellitus, GPP n=94, localised PP n=52; <sup>d</sup>IHD-ischaemic heart disease, GPP n=92, localised PP n=52; <sup>e</sup>CVA-cerebrovascular accident, GPP n=92, localised PP n=52; <sup>f</sup>GPP n=74, localised PP n=43; <sup>g</sup>GPP n=84, localised PP n=47; <sup>h</sup>GPP n=93, localised PP n=51; <sup>i</sup>GPP n=92, localised PP n=52; <sup>j</sup>DLQI-dermatology life quality index, GPP n=81, localised PP n=50; <sup>k</sup>BSA >10 and/or DLQI >10, GPP n=65, localised PP n=40

**Table 2: Demographic and clinical characteristics of psoriasis patients**

Demographic and clinical characteristics		PP n=148 (%)	Non PP n=20322 (%)	p-value
Age of onset (years)	Mean (SD)	31.71±18.33	33.37±16.91	0.248
	Min, Max	1, 84	1, 88	
Gender	M:F	1:2.1	1.26:1	<0.001
Ethnicity	Malay	94 (63.5)	10968 (54)	N/A
	Chinese	29 (19.6)	3868 (19)	
	Indian	8 (5.4)	3370 (16.6)	
	Others	17 (11.5)	2110 (10.4)	
Family history of psoriasis		19 (13)	4595 (22.9)	0.005
Comorbidities	<sup>l</sup> Dyslipidemia	34 (23.6)	3240 (16.5)	0.022
	<sup>m</sup> Hypertension	35 (24.1)	4735 (23.8)	0.94
	<sup>n</sup> DM	28 (19.2)	3153 (18.9)	0.284
	<sup>o</sup> IHD	4 (2.7)	972 (4.9)	0.237
	<sup>p</sup> CVA	2 (1.4)	290 (1.5)	0.939
	<sup>q</sup> HIV	0	98	0.769
<sup>r</sup> Body surface area (BSA) (%)	<5	49 (41.9)	7097 (44.7)	N/A
	5-10	24 (20.5)	4994 (31.5)	
	11-90	31 (26.5)	3374 (21.3)	
	>90	13 (11.1)	408 (2.5)	
<sup>s</sup> Body mass index (BMI) (kg/m <sup>2</sup> )	<25	64 (48.9)	8075 (43.6)	N/A
	$\geq 25$ (obese)	67 (51.1)	10083 (54.4)	
<sup>t</sup> Face and neck involvement		69 (47.9)	10049 (51)	0.378
Nail disease		80 (54)	11336 (56)	0.562
<sup>u</sup> Scalp involvement		88 (61)	16045 (81.4)	<0.001
<sup>v</sup> Psoriatic arthropathy		15 (10.1)	2623 (13.1)	0.292
<sup>w</sup> DLQI >10		64 (48.9)	7458 (40.3)	0.046
<sup>x</sup> Severe psoriasis		68 (65)	7286 (50)	0.003

M-male ; F-female; <sup>l</sup>PP n=144, non PP n=19620; <sup>m</sup>PP n=145, non PP n=19826; <sup>n</sup>DM-diabetes mellitus, PP n=146, non PP = 19808; <sup>o</sup>IHD-ischaemic heart disease, PP n=144, non PP n=19797; <sup>p</sup>CVA-cerebrovascular accident, PP n=144, non PP = 19791; <sup>q</sup>HIV-Human immunodeficiency virus; <sup>r</sup>PP n=117, non PP n=15873; <sup>s</sup>PP n=131, non PP n=18518; <sup>t</sup>PP n=144, non PP n=19475; <sup>u</sup>PP n=144, non PP n=19691; <sup>v</sup>PP n=148, non PP n=20079; <sup>w</sup>DLQI-dermatology life quality index, PP n=131, non PP n=18527; <sup>x</sup>BSA >10 and/or DLQI >10 PP n=105, non PP n=14583

### Results

**Table 3: Treatment modalities among psoriasis patients**

Treatment	PP n (%)	Non PP n (%)	p-value
<sup>*</sup> Topical	139 (95.9)	18906 (94.9)	<0.001
<sup>†</sup> Phototherapy	2 (1.4)	522 (2.6)	0.349
<sup>‡</sup> Systemic therapy	74 (51.4)	2749 (13.9)	<0.001
Acitretin	41 (28.5)	508 (2.6)	<0.001
Methotrexate	24 (16.7)	2162 (10.9)	0.028
Systemic corticosteroids	9 (6.3)	165 (0.8)	<0.001
Cyclosporin	7 (4.9)	129 (0.7)	<0.001
Biologics	0	78 (0.4)	0.45
Hydroxyurea	0	23 (0.12)	0.682

<sup>\*</sup>PP n=145, non PP n=19914; <sup>†</sup>PP n=144, non PP n=19914; <sup>‡</sup>PP n=144, non PP n=19802

### Discussion

- Less than 1% of the psoriasis patients notified to the MPR had PP, reflecting the rarity of this disease. Interestingly, Yan et al<sup>2</sup> found Asians and Hispanics/Latinos had higher odds of having pustular psoriasis compared to Caucasians.
- Our study showed a female preponderance in PP patients, consistent with previous studies.<sup>3,4,5</sup>
- Twelve et al<sup>6</sup> found that GPP patients had a younger age of onset compared to palmoplantar pustulosis (PPP) and acrodermatitis continua of Hallopeau (ACH).
- The high proportion of scalp involvement among our GPP patients differs from the findings from a Korean study.<sup>5</sup>
- Nail involvement was found in 21% of GPP patients in Korea.<sup>5</sup>
- Wong et al<sup>7</sup> found no association between GPP with dyslipidemia, contrary to our findings.
- The majority of GPP patients had severe disease. This could be due to the clinical course of GPP where more than one-third experienced recurrent flares involving BSA >30%.<sup>1</sup>
- More than half of the PP patients required systemic therapy, which mirrored the high proportion of patients having severe disease.
- Acitretin was the most frequently used systemic agent followed by methotrexate, in accordance with the first line recommended therapy for PP.<sup>8,9</sup>
- Biologics such as antagonist of TNF $\alpha$ , IL-1, IL-17 and IL-23 have been studied in the treatment of PP.<sup>10</sup> However, none of the PP patients in our cohort were treated with biologics as it is not approved by the Food and Drug Administration (FDA) or local guidelines for the treatment for PP.

### Limitations

- As this was a retrospective study the causal relationship could not be determined.
- Information on the subtypes of localized PP was not available.
- The notification to MPR is voluntary and there may be underreporting.

### Conclusion

Overall, 0.7% of the psoriasis patients in the MPR had pustular psoriasis. This cohort presented with severe disease, a higher rate of dyslipidemia and were more likely to receive systemic treatment.

### Acknowledgement

We would like to thank the Director General of Health, Malaysia for permission to present this poster.

### References

- Choon et al. Int J Dermatol 2014; 53:676.
- Yan D et al. Dermatol Online J 2018 Jul 15; 24(7):13030/qt5z21q4k2.
- Baker et al. Br J Dermatol 1968; 80:771-793.
- Jay et al. Int J Dermatol 1997; 36:266-271.
- Jin et al. J Dermatol 2015; 42:674.
- Twelve S et al. J Allergy Clin Immunol. 2019 Mar; 143(3):1021-26.
- Wong et al. Malaysian J Dermatol 2019; 43:21-28.
- Fujita et al. J Dermatol 2018; 45:1235.
- Robinson et al. J Am Acad Dermatol 2012 Aug; 67(2):279-88.
- Wang et al. Exp Opin Drug Saf 2020; 19:969-80.