Unraveling the Disease Burden of Generalized Pustular Psoriasis: A Comparative Analysis of Flares with Psoriasis Vulgaris in Taiwan

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BACKGROUND

- Generalized pustular psoriasis (GPP) is a rare and life-threatening skin inflammatory disease characterized by intermittent systemic acute flares.
- The prevalence of GPP increased in Taiwan between 2017 and 2020.[1] However, comprehensive information regarding patient characteristics and overall impact of disease remained insufficient.

OBJECTIVES

- This study aimed to assess **patient characteristics**, **healthcare resource utilization (HCRU)**, and **costs** associated with GPP flares in Taiwan.

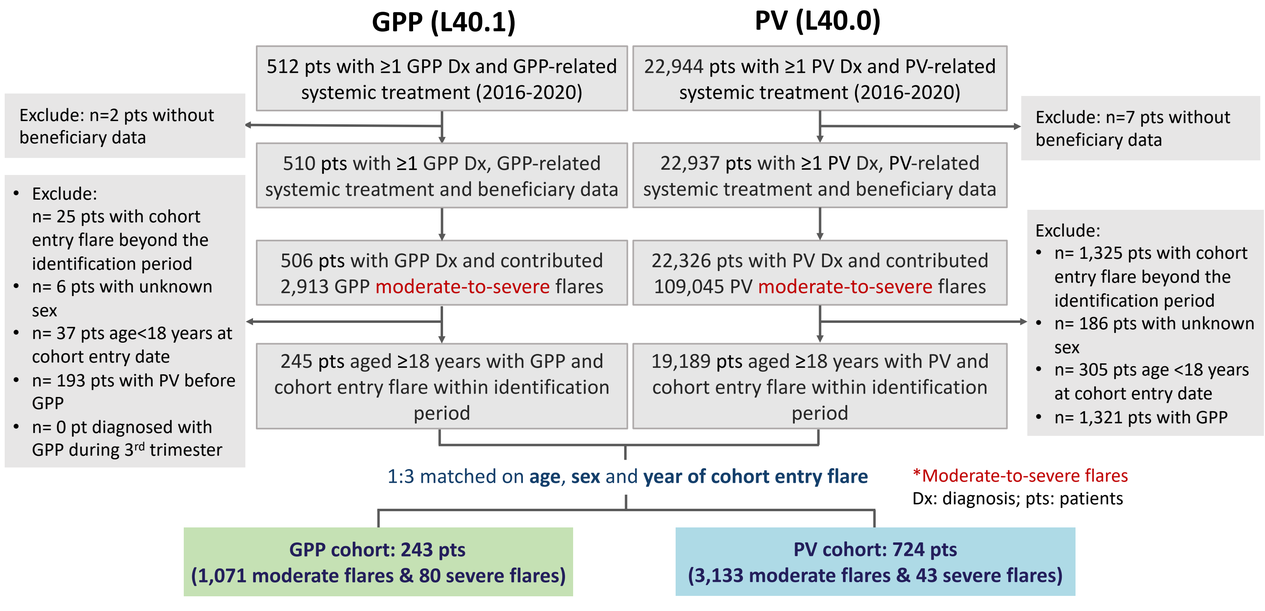
METHODS

- **Study design:** retrospective cohort study involving individuals with GPP, along with a matched cohort of patients with psoriasis vulgaris (PV) for comparative analysis
- **Data source:** Taiwan's National Health Insurance Research Database
- **Inclusion criteria (for GPP & PV)**
  - Age ≥18 with GPP (ICD-10-CM L40.1) or PV (ICD-10-CM L40.0) diagnosis and related systemic treatment during 2016-2020
  - With the intensification of systemic treatment* between Jan 2017 and Sep 2020 (the first date assigned as the cohort entry date)

*Moderate-to-severe flares were defined as having an escalation in systemic dermatological treatment, including (a) transitioning from no related medication or only topical treatments to the use of systemic treatment; (b) switching or adding another systemic treatment; (c) resuming systemic treatment after a three-month gap; (d) increasing medication dose. Severe flares were those that required hospitalization.

- **Exclusion criteria**
  - **For GPP:** (1) patients who experienced GPP exclusively during the third trimester of pregnancy; (2) those with a PV diagnosis before the initial diagnosis of GPP
  - **For PV:** patients who also had a diagnosis of GPP
- **GPP and PV cohorts**
  - 1: 3 randomly matched by age, sex, and year of cohort entry flare
- **Study outcomes associated with moderate and severe flares**
  - Healthcare resource utilization: (all-cause) ER visits, outpatient visits, hospitalizations, and ICU stays within 12 weeks after moderate/severe flares
  - Costs: (all-cause) within 12 weeks after moderate/severe flares; adjusted by floating unit and consumer price index (CPI)

Flow diagram of GPP and PV study cohort selection



Baseline characteristics of GPP and PV patients at cohort entry

	GPP n=243	PV n=724
Demographics		
Age at cohort entry date, mean ± SD	51.0 ± 16.5	50.8 ± 16.3
Male sex, n (%)	122 (50.2)	366 (50.6)
Comorbidities		
Diabetes mellitus, n (%)	41 (16.9)	112 (15.5)
Hypertension, n (%)	67 (27.6)	195 (26.9)
Dyslipidemia, n (%)	38 (15.6)	139 (19.2)
Thyroid disease, n (%)	44 (18.1)	126 (17.4)

HEALTHCARE RESOURCE UTILIZATION (HCRU) AND COSTS

A. HCRU – Emergency room (ER) visits within 12 weeks following flare

	GPP flares		PV flares	
	Proportion with ER visits, n / total (%)	Number of ER visits, median (Q1-Q3)*	Proportion with ER visits, n / total (%)	Number of ER visits, median (Q1-Q3)*
Moderate/ Severe flares	166 / 1,151 (14.4%)	1 (1-2)	298 / 3,176 (9.4%)	1 (1-2)
Moderate flares	143 / 1,071 (13.4%)	1 (1-1)	283 / 3,133 (9.0%)	1 (1-2)
Severe flares	23 / 80 (28.8%)	1 (1-2)	15 / 43 (34.9%)	1 (1-2)

*Counts among those with ER visits.

B. HCRU – Outpatient department (OPD) visits within 12 weeks following flare

	GPP flares		PV flares	
	Proportion with OPD visits, n / total (%)	Number of OPD visits, median (Q1-Q3)*	Proportion with OPD visits, n / total (%)	Number of OPD visits, median (Q1-Q3)*
Moderate/ Severe flares	1,147 / 1,151 (99.7%)	5 (3-8)	3,169 / 3,176 (99.8%)	5 (3-8)
Moderate flares	1,071 / 1,071 (100%)	5 (3-8)	3,131 / 3,133 (99.9%)	5 (3-8)
Severe flares	76 / 80 (95%)	5 (3-7)	38 / 43 (88.4%)	7 (5-11)

*Counts among those with OPD visits.

C. HCRU – Hospitalizations within 12 weeks following flare

	GPP flares		PV flares	
	Proportion with hospitalization, n / total (%)	Hospital LOS, median (Q1-Q3)*	Proportion with hospitalization, n / total (%)	Hospital LOS, median (Q1-Q3)*
Moderate/ Severe flares	209 / 1,151 (18.2%)	10 (6-19)	218 / 3,176 (6.9%)	7 (4-15)
Moderate flares	129 / 1,071 (12.0%)	9 (6-14)	175 / 3,133 (5.6%)	7 (4-14)
Severe flares	80 / 80 (100%)	13 (8-26)	43 / 43 (100%)	11 (4-17)

*Length of stay (LOS) among those with hospitalizations.

D. HCRU – Intensive care unit (ICU) stay within 12 weeks following flare

	GPP flares		PV flares	
	Proportion with ICU stay, n / total (%)	ICU LOS, median (Q1-Q3)*	Proportion with ICU stay, n / total (%)	ICU LOS, median (Q1-Q3)*
Moderate/ Severe flares	19 / 1,151 (1.6%)	14 (5-27)	29 / 3,176 (0.9%)	11 (5-32)
Moderate flares	4 / 1,071 (0.4%)	13 (8-24.5)	19 / 3,133 (0.6%)	16 (5-37)
Severe flares	15 / 80 (18.8%)	22 (5-27)	10 / 43 (23.3%)	10 (5-17)

*Length of stay (LOS) among those with ICU stay.

E. Costs within 12 weeks following flare

	GPP flares			PV flares		
	Number of flare (%)	Costs (NTD)	Costs (USD)	Number of flare (%)	Costs (NTD)	Costs (USD)
Moderate/ Severe flares	1,151 (100%)	26,190 (10,260-89,389)	873 (342-2,972)	3,176 (100%)	16,673 (7,069-72,864)	555 (235-2,426)
Moderate flares	1,071 (93.0%)	22,875 (9,611-85,776)	760 (320-2,853)	3,133 (98.6%)	16,330 (6,942-70,111)	543 (231-2,337)
Severe flares	80 (7.0%)	127,025 (41,252-241,958)	4,219 (1,373-8,046)	43 (1.4%)	147,268 (44,853-358,392)	4,891 (1,492-11,915)

RESULTS

- A total of 243 patients with GPP (comprising 1,151 flares) and 724 matched patients with PV (involving 3,176 flares) were included. The proportion of severe flares was greater among patients with GPP compared to those with PV (7.0% vs. 1.4%).
- Moderate/severe flares in patients with GPP were associated with higher rates of emergency care utilization (14.4% vs. 9.4%) and hospitalization (18.2% vs. 6.9%) compared to flares in patients with PV. In addition, GPP flares, compared to PV flares, resulted in longer hospital stays (median 10 vs. 7 days) and a higher rate of admission to ICU (1.6% vs. 0.9%).
- The costs for medical care were notably greater for GPP flares, especially when comparing moderate flares.

CONCLUSION

GPP flares lead to increased HCRU and higher costs compared to PV flares. The study emphasizes the necessity for specific interventions to alleviate the impact of GPP on patients and the healthcare system.

Reference: 1. Lu C, Tseng C, Lin F, Chung W. Clinical characteristics and disease burden of patients with generalized pustular psoriasis in Taiwan: A study using electronic medical records & national claims databases. Journal of Investigative Dermatology 2023;143(5):S71.