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Liver Disease in Patients with Psoriasis: Data from the Malaysian Psoriasis Registry

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Introduction

Therapeutic options may be limited for psoriasis patients with concomitant liver disease.[1] We report the frequency of liver disease among psoriasis patients, and describe the clinical features, treatment modalities and health-related quality of life (HRQoL) among psoriasis patients with liver disease.

Materials & Methods

This was a multi-centre retrospective cross-sectional study. All psoriasis patients notified to the Malaysian Psoriasis Registry (MPR) from January 2007 to December 2018 were included into this study.

Results

- Of 21,735 psoriasis patients registered to the MPR, 174 (0.8%) had liver disease. Of these, 5.3% had concurrent HIV infection.
- The 5 most common liver diseases occurring among psoriasis patients were hepatitis B (33.9%), hepatitis C (27.0%), non-alcoholic fatty liver disease (NAFLD) (14.4%), cirrhosis (8.0%) and alcoholic liver disease (1.7%).
- Plaque-type psoriasis was the most frequent presentation.
- Psoriasis patients with liver disease had a significantly higher rate of arthropathy (p = 0.002) and nail involvement (p < 0.001) (Table 2).
- Psoriasis patients with liver disease had a significantly higher rate of severe psoriasis (59.3% vs 49.9%, p = 0.027) [defined as the affected body surface area (BSA) > 10% and/or a Dermatology Life Quality Index (DLQI) score > 10] compared to those without.
- The mean DLQI score for psoriasis patients with liver disease is 9.69 ± 7.20.
- The DLQI domains that were significantly impaired for psoriasis patients with liver disease were personal relationship (p = 0.042) and treatment (p = 0.007).

Table 1: Demographic Distribution of MPR Patients

Demographic Characteristics		Psoriasis with liver disease	Psoriasis without liver disease	p-Value
Gender		N = 174	N = 21,561	
Male		138 (79.3%)	11,920 (55.3%)	< 0.001
Female		36 (20.7%)	9,641 (44.7%)	
Age of Onset of Psoriasis (years)		37.25 ± 13.47	33.26 ± 16.96	< 0.001
Ethnicity		N = 174	N = 21,553	
Malay		73 (42.0%)	11,718 (54.4%)	
Chinese		51 (29.3%)	4,097 (19.0%)	
Indian		26 (14.9%)	3,554 (16.5%)	
Others		24 (13.8%)	2,184 (10.1%)	
Family history of psoriasis		N = 174 49 (28.2%)	N = 20,980 4,808 (22.9%)	0.101
Co-morbidities	Dyslipidemia	N = 171 47 (27.5%)	N = 20,554 3,365 (16.4%)	< 0.001
	Hypertension	N = 171 58 (33.9%)	N = 20,788 4,928 (23.7%)	0.002
	Diabetes Mellitus	N = 170 38 (22.4%)	N = 20,759 3,291 (15.9%)	0.021
	Ischemic Heart Disease	N = 171 9 (5.3%)	N = 20,744 1,002 (4.8%)	0.793
	Cerebrovascular Disease	N = 170 2 (1.2%)	N = 20,736 305 (1.5%)	0.751
	HIV	N = 171 9 (5.3%)	N = 21,561 96 (0.4%)	< 0.001
Body Mass Index (BMI) (kg/m^2)		N = 156	N = 19,044	
< 18.5		11 (7.0%)	1,378 (7.2%)	
18.5 – 22.9		36 (23.1%)	4,240 (22.3%)	
23 – 24.9		31 (19.9%)	2,854 (15.0%)	
≥ 25		78 (50.0%)	10,572 (55.5%)	

Table 2: Clinical Characteristics of MPR Patients

Clinical Characteristics		Psoriasis with liver disease	Psoriasis without liver disease	p-Value
Body Surface Area (BSA) (%)		N = 144	N = 16,426	
< 5		47 (32.6%)	7,376 (44.9%)	
5 – 10		33 (22.9%)	5,159 (31.4%)	
11 – 90		57 (39.6%)	3,469 (21.1%)	
> 90		7 (4.9%)	422 (2.6%)	
Area of Involvement	Scalp	N = 165 129 (78.2%)	N = 20,477 16,642 (81.3%)	0.311
	Face and Neck	N = 163 86 (52.8%)	N = 20,249 10,424 (51.5%)	0.744
	Nail	N = 170 133 (78.2%)	N = 20,932 11,743 (56.1%)	< 0.001
	Arthropathy	N = 171 36 (21.1%)	N = 20,917 2,720 (13.0%)	0.002
Types of Psoriasis		N = 168	N = 20,207	
Plaque		153 (91.1%)	18,842 (93.3%)	
Guttate		4 (2.4%)	734 (3.6%)	
Pustular		2 (1.2%)	146 (0.7%)	
Flexural		2 (1.2%)	102 (0.5%)	
Erythrodermic		7 (4.1%)	383 (1.9%)	
Mean DLQI		9.69 ± 7.20	9.62 ± 6.75	0.88

Table 3: Treatment of MPR Patients

Treatment Options	Psoriasis with liver disease	Psoriasis without liver disease	p-Value
Topical Therapy	N = 166 162 (97.6%)	N = 20,741 19,676 (94.9%)	0.112
Phototherapy	N = 166 14 (8.4%)	N = 20,409 538 (2.6%)	< 0.001
Systemic Therapy	N = 164 30 (18.3%)	N = 20,614 2,930 (14.2%)	0.137
Methotrexate	N = 164 16 (9.8%)	N = 20,614 2,277 (11.0%)	0.60
Acitretin	N = 164 12 (7.3%)	N = 20,614 569 (2.8%)	< 0.001
Cyclosporin	N = 164 5 (3.0%)	N = 20,614 139 (0.7%)	< 0.001
Systemic Corticosteroids	N = 164 1 (0.6%)	N = 20,614 178 (0.9%)	0.726
Hydroxyurea	N = 164 0	N = 20,614 23 (0.1%)	0.669
Biologics	N = 164 0	N = 20,614 78 (0.4%)	0.43

Discussion

- Psoriasis has been associated with a high prevalence of liver disease.[1]
- Viral hepatitis infections were commonly found in our cohort followed by NAFLD.
  - ❖ In Taiwan, hepatitis B & C were the most common type of liver diseases encountered.[2]
  - ❖ In United Kingdom, NAFLD was the most common type of liver disease (37.85%) followed by alcoholic liver disease (18.53%) and viral hepatitis (7.76%).[3]
- About one third of our study cohort had concurrent co-morbidities and almost half of them were obese. Obesity has been shown to be related to the prevalence of NAFLD.[3]
- Psoriasis patients with liver disease had a significantly higher prevalence of joint and nail involvement.
  - ❖ This increases the inflammatory burden and risk of systemic involvement compared to isolated psoriasis.[3]
  - ❖ The mechanism of hepatic damage in psoriasis patients is unclear but is hypothesized to be related to the "hepatodermal axis".[3,4]
  - ❖ Cytokines that were released from skin lymphocytes circulate through the liver causing damage to the hepatocytes.
  - ❖ This will stimulate the hepatocytes to release more inflammatory mediators that will circulate systemically and promote keratinocyte hyperproliferation.
- Psoriasis patients with liver disease reported an impaired social life.
  - ❖ Results were consistent with previous studies reporting a significant proportion of patients with high disease severity and poor HRQoL.[5]
  - ❖ This may be related to the severity of disease along with extracutaneous manifestations of psoriasis.
- Systemic medications used to treat psoriasis can be deleterious to the liver.[6]
  - Although about 60% of our patients with liver disease had severe psoriasis:
    - ❖ Majority of them were treated with topical therapy.
    - ❖ Less than 10% were treated with phototherapy.
    - ❖ Less than 20% were started on conventional systemic therapy.
    - ❖ None were exposed to biologics treatment.
  - The main challenge is choosing the most appropriate treatment according to the underlying co-morbidities.
    - ❖ Habitual alcohol consumption and presence of co-morbidities may exacerbate the hepatotoxic effect of systemic therapy and increase the risk of drug toxicity.[7]
  - Conventional systemic treatments are associated with potential hepatotoxicity due to either direct liver damage or immunosuppression or both.[6]
  - Highly efficacious biologic therapies are now available to treat psoriasis.
    - ❖ In the presence of viral hepatitis, antiviral prophylaxis is recommended prior to the initiation of biologics.[6,8] However, reactivation of viral hepatitis has been reported despite adequate antiviral coverage.[8]
    - ❖ On the other hand, TNF-α and IL-17 blockade are effective in controlling psoriasis with NAFLD by attenuating the damage induced by inflammation of the skin and the liver.[6,7]
- Clinicians should be aware that the common endpoint of liver disease is the development of liver fibrosis and cirrhosis.[9]
  - ❖ Currently the gold standard for the assessment of liver fibrosis is liver biopsy, which is invasive, expensive and highly influenced by both sampling and observer bias.[9]
  - ❖ Thus, various serologic tests and radiologic imaging (ultrasound-based elastography, magnetic resonance elastography, acoustic radiation force impulse imaging and cross-sectional imaging) have been developed. They are better tolerated, safer, more acceptable and affordable alternatives for evaluation of the liver.[4,9]
  - ❖ More studies are advocated on ways to assess and monitor hepatotoxicity in patients with psoriasis using non-invasive methods to reduce the number of liver biopsies.

Conclusion

The frequency of liver disease among psoriasis patients notified to the MPR was 0.8% with viral hepatitis being the most frequent aetiology. Psoriasis patients with liver disease had more nail and joint involvement than those without liver disease, and 60% of them presented with severe disease. Risk factors for severe liver disease such as obesity, alcohol use and hepatotoxic medications should be carefully considered in psoriasis patients with liver disease, particularly when systemic medications are indicated. Dermatologists and hepatologists should work together to provide optimal care for these patients and in selecting a therapy that ensures a shared benefit.

Acknowledgement & Conflict of interest

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