



New Onset Plaque Psoriasis in a Hemodialysis Patient: A Case Report and Review of Literature

Abstract

Psoriasis is a common chronic skin condition characterized by erythematous plaques with silvery scales. Several small studies have shown the beneficial effects of peritoneal dialysis and hemodialysis on severe psoriasis cases that were refractory to different therapies even without renal impairment. On the other hand, new onset psoriasis after the initiation of hemodialysis or peritoneal dialysis in end-stage renal disease (ESRD) patients has been rarely reported. We describe a 37-year-old male ESRD patient who developed plaque psoriasis two months after starting hemodialysis. We reviewed the published cases of psoriasis in dialysis patients and the potential therapeutic options used.

Keywords: End-stage renal disease, hemodialysis, psoriasis, treatment

Introduction

Psoriasis is a common chronic skin condition that affects 0.2%–4.8% of the population worldwide and is characterized by erythematous plaques with silvery scales.¹ Improvement of severe plaque psoriasis after initiation of hemodialysis in a patient with chronic kidney disease was first reported by McEvoy and Kelly in 1976.² Several other small studies showed the beneficial effects of dialysis on severe psoriasis cases refractory to different therapies.^{3–6} On the other hand, new onset psoriasis after the initiation of hemodialysis or peritoneal dialysis in end-stage renal disease (ESRD) patients has been rarely reported.⁷ We describe a patient who developed plaque psoriasis two months after starting hemodialysis.

Case Report

A 37-year-old man had ESRD secondary to type 1 diabetes mellitus and essential hypertension for 15 years. On October 2018, he was started on hemodialysis (HD) via a tunneled catheter, and a left brachiocephalic arteriovenous fistula (AVF) was created.

He presented on January 2019 with a two-month progressive history of skin lesions with silver scales over both elbows and knees. New skin lesions were developing after minor skin trauma or cannulation of AVF (Koebner's

phenomenon). There were no nail changes or joint involvement. He had no family history of psoriasis or other dermatological conditions or autoimmune diseases.

Physical examination revealed well-defined erythematous plaques with silvery scales over the elbows, knees, and at the site of previous cannulation [Figure 1]. His laboratory data showed microcytic hypochromic anemia (7.6 g/dl). He had secondary hyperparathyroidism, elevated uric acid level of 7.15 mg/dl, and HbA1c level of 7.7%. The chronic dialysis medications were adjusted, and hemodialysis sessions were intensified.

The dermatology team confirmed the clinical diagnosis of plaque psoriasis, and he was managed with topical steroid and vitamin D3 derivatives (betamethasone topical 0.064%-and calcipotriol 0.005%). there was a significant clinical improvement in psoriasis skin lesions over two months. Follow-up care after three years revealed recurrence of few psoriasis skin lesions as the patient stopped the psoriasis topical therapy for almost 1 year.

Discussion

Psoriasis is a chronic, complex, immune-mediated inflammatory disease that manifests through the development of inflammatory plaques on the skin. Patients with extensive

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Figure 1: Psoriasis skin lesions. Typical plaque psoriasis skin lesions with silver scales in extensor body area including the (a) right elbow, (b) left elbow, and (c) left knee.

Table 1: Summary of published data on new onset psoriasis during dialysis (HD, PD)

Study	Patient age/Gender	Mode of dialysis (PD, HD)	Duration of dialysis before onset of psoriasis	Type of psoriasis	Treatment
Triga <i>et al.</i> , 2012 ¹⁰	38 years/Female	HD	5 years	Extensive plaque psoriasis	Cyclosporine A (CyA) for 6 months
Friedman <i>et al.</i> , 1979 ¹⁵	58 years/Female	HD	5 years	Plaque psoriasis	No topical therapy; Did not improve with HD
Breathnach <i>et al.</i> , 1979 ¹⁶	41 years/Male	HD	4 years	Extensive plaque psoriasis	Not reported; Changed to peritoneal dialysis
Rimsevicius <i>et al.</i> , 2017 ¹¹	52 years/Male	PD	16 months	Plaque psoriasis	Emollients and topical corticosteroids
Yamamoto <i>et al.</i> , 2006 ¹⁷	65 years/Male	HD	3 years	Plaque psoriasis	Topical steroid and vitamin D3
	55 years/Female	HD	6 years	Plaque psoriasis	
Peserico <i>et al.</i> , 1979 ¹⁸	40 years/Male	HD	10 years	Plaque psoriasis	Topical steroid and coal tar
Present Case	37 years/Male	HD	2 months	Plaque psoriasis	Topical steroid and vitamin D3
Wang <i>et al.</i> , 2018 ¹³	165 patients	HD	2.4 years	Psoriasis	Various topical (n=121) and systemic medicines (n=11): Retinoids - 3 Methotrexate - 6 Cyclosporin - 2
Geerse <i>et al.</i> , 2014 ¹²	55 years/Male	PD	14 months	Psoriasis vulgaris	Topical steroid and vitamin D3

HD: hemodialysis, PD: peritoneal dialysis

psoriasis have an increased risk of developing metabolic syndrome and cardiovascular disease. The cutaneous manifestation of psoriasis resulted from the interaction between triggering factors and keratinocytes, dendritic cells, T cells (Th17), neutrophils, and the cytokines released from both innate and adaptive immune cells (interferon (IFN)-alpha, tumor necrosis factor (TNF)-alpha, and interleukin (IL)-23, 12, 22, and 17. The interaction between genetic, epigenetic, and inflammatory cascades and environmental factors have been implicated in the development of psoriasis.⁸

There are several types of psoriasis, such as plaque, guttate, erythrodermic, pustular, and inverse. Plaque psoriasis is associated with Koebner's phenomenon that indicates the recurrence of psoriasis skin lesions at sites of trauma or scars.

In dialysis patients, plaque psoriasis has been reported to occur at the needling sites of the AVF^{9,10} and at peritoneal dialysis catheter insertion scars or exit sites.^{11,12} Chronic plaque-type psoriasis is common, whereas psoriatic arthritis and nail changes are rare or underreported in dialysis patients.^{8,13}

Previous studies have shown the beneficial effect of dialysis on refractory psoriasis cases even without renal impairment. Peritoneal dialysis was more effective and showed a high response rate compared to HD. In a review of literature, there was a total of 79 patients with severe refractory psoriasis who showed remarkable improvement after being treated with either HD or PD.^{11,14} On the other hand, new onset psoriasis after the initiation of hemodialysis or peritoneal dialysis in ESRD patients has been rarely reported. There was a total of eight reported cases of new onset psoriasis

in ESRD patients after the initiation of dialysis (6 HD and 2 PD) [Table 1].^{10-13,15-18} The occurrence of psoriasis after many years of dialysis might not be directly related and might be a coincidence. A large cohort study (74,916 ESRD patients) showed a higher incidence of psoriasis among ESRD patients on maintenance HD when compared to a control group. New onset psoriasis developed in 165 patients, with an incidence rate of 91.7 per 100,000 people per year and with a mean follow up of 2.4 years. HD patients younger than 60 years had a higher risk of developing psoriasis.¹³

The clinical course of psoriasis is unpredictable. It is unknown whether the dysregulation of the immune system in hemodialysis patients can contribute to development of psoriasis.

Treatment of psoriasis in ESRD patients needs to be tailored according to disease severity, relevant comorbidities, and medication safety. The majority of the patients will require only topical treatments, including steroids, vitamin D3 derivatives, coal tar, among others.^{13,14} ESRD patients with extensive psoriasis show favorable outcomes after using systemic medications like retinoids and cyclosporine.¹⁰ Also, according to a study, ustekinumab (anti-interleukin [IL]-12/-23 antibody) therapy of one year duration led to clinical improvement in three HD patients who had extensive psoriasis.¹⁹ The selection of various therapeutic strategies has to be individualized. Lifestyle modifications, adherence to medications, and avoidance of triggers are essential steps to control psoriasis and improve the patient's quality of life.

Conclusion

New onset psoriasis in ESRD patients after initiation of hemodialysis is rare. Management of such a condition focuses on topical treatment, with an assessment for the need of systemic medications. Further studies are needed to delineate the pathophysiology of psoriasis in such a population.

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Ethical approval

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Conflicts of interest

There are no conflicts of interest.

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