BRIEF ARTICLES

“They Won’t Let Me Return to Work.” A Carpenter Diagnosed with Porphyria Cutanea Tarda

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ABSTRACT

Porphyria cutanea tarda (PCT) is characterized by a skin blistering eruption that develops in sun exposed areas of the skin. It is the most common cutaneous porphyria world-wide, and classically associated with hepatic injury but also estrogen use, cigarette smoking, and HIV. In any case of photodistributed persistent blistering skin condition, PCT must be high on the differential. This case of a carpenter diagnosed with PCT not only illustrates a classic case but also the opportunity to achieve significant response to therapy in a motivated patient particularly with improved access to direct-acting antivirals (DAA) for hepatitis C treatment.

CASE PRESENTATION

A 46 year old white man with a past medical history of chronic untreated hepatitis C, alcohol abuse, 35 pack year smoking history, and a difficult socioeconomic situation presented to primary care clinic in a rural setting with concern over 6-7 months of recurrent, itchy, easily ruptured blisters and small white bumps. He was not on any medications. He denied any personal or family history of blistering disorders or other chronic skin conditions. Lesions primarily occurred along the dorsum of hands and forearms, face, nose, and ears. He worked as a carpenter, often outdoors and the skin condition interfered with his livelihood. He was held out of work by his employer at time of presentation.

Physical exam revealed scattered 0.5-1.5 cm erosions and ulcerations with secondary crusting as well as milia, dyspigmentation, and scarring at sites of prior inflammation in photodistributed areas along the dorsum of the hands, forearms to mid upper arms (figure 1 and 2), face and ears. Given the distribution and morphology of lesions as well as patient history of hepatitis C and alcohol use, there was high suspicion for porphyria cutanea tarda (PCT). Skin biopsy, serum and urine porphyrins testing, testing for hepatitis C viral load as well as HIV screening was also done.

Figure 1. Scattered erosions and ulcerations, milia, and dyspigmentation on the dorsal aspect of hand. Photo from initial encounter.

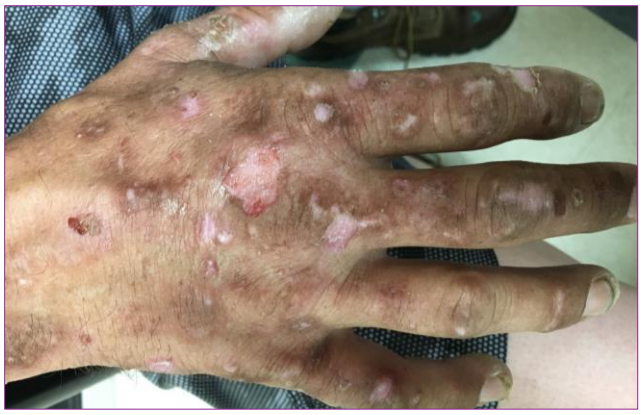


Figure 2. Erosions, ulcerations, milia and dyspigmentation on the sun-exposed areas of hands and forearms. Photo from initial encounter.

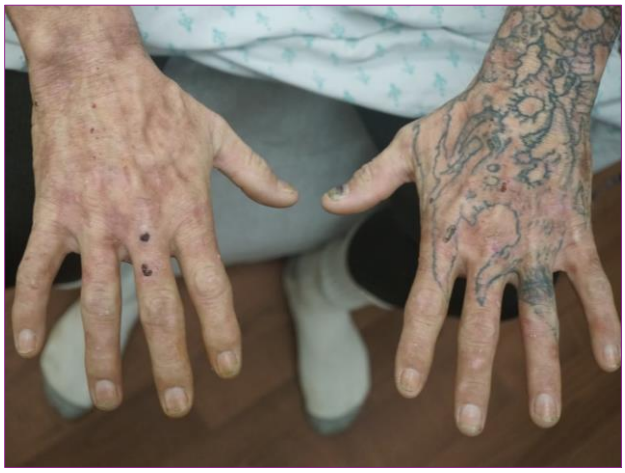
Punch biopsy showed subepidermal vesicle with hyalinized dermal fibrosis, thickened dermal capillary vessels, and protrusion of dermal papillae into bullous spaces. Special stains periodic acid-Schiff with diastase (PAS-D) and immunohistochemical stain for treponema pallidum were negative for fungal organisms or spirochetes respectively. PAS-D highlighted the dermal capillary vessel walls. Findings were most consistent with PCT.

Given high suspicion of PCT with guidance from dermatology this patient had biopsy and the listed lab work completed in one visit in our residency primary care clinic. Based on results the patient was then

Table 1. Labs including Hep C, HIV and porphyrin studies

Lab	Result	Reference Range
Hep C genotype 1a and viral count	66900 IU/L	N/A
HIV	Negative	Negative
Iron	88 ug/dL	50-175 ug/dL
TIBC	399 mcg/dL	250-400 mcg/dL
Iron saturation	22%	15-50%
Total porphyrins	32.8 mcg/dL	< 1.0 mcg/dL
Uroprophyrin Octa	2493 nmol/L	<30 nmol/L
Heptacarboxylporphyrins	1130 nmol/L	<7 nmol/L
Hexacarboxylaporphyrins	95 nmol/L	<20 nmol/L
Pentacarboxylporphyrins	73 nmol/L	<5 nmol/L
Coproporphyrin, Tetra	122 nmol/L	<110 nmol/L
Porphobilinogen	0.3 nmol/L	< 1.3 nmol/L

Figure 3. Significant improvement of skin eruption following therapeutic intervention with phlebotomy, hydroxychloroquine, photo protection, alcohol cessation, and curative hepatitis C treatment.



referred to gastroenterology for treatment of hepatitis C, to hematology for phlebotomy, and dermatology to help guide therapy with hydroxychloroquine. The patient completed successful treatment of his hepatitis C. He

was motivated and subsequently discontinued alcohol use, decreased cigarette use, and began practicing proper sun protection. The patient had a significant response to combination therapy with near complete resolution of his skin condition (Figure 3) and happily was able to return to work.

DISCUSSION

Porphyrias are uncommon metabolic disorders that result from enzyme deficiency and/or defective enzymes along the heme biosynthetic pathway[1,4] Porphyria cutanea tarda is the most common cutaneous porphyria worldwide. It is caused by acquired (approximately 75%) or hereditary PCT (approximately 25%) defect in a liver enzyme uroporphyrinogen decarboxylase (UROD).[1,5]

Clinically, PCT presents with skin fragility, blisters, erosions, crusting, and milia on sun-exposed areas.[1,2] Mottled hyper- and hypopigmentation and hypertrichosis in the periorbital areas are frequently observed.[3]
Differential diagnosis includes: PCT vs Bullous lupus erythematous vs Bullous Pemphigoid vs Pseudoporphyria vs other porphyrias vs Polymorphorphous light eruption vs Pemphigus Vulgaris vs less likely atypical presentation of secondary syphilis vs bullous tinea.
Most cases present after the 4th decade of life.[2] Men are more commonly affected than women, and there is a strong association with hepatitis C, hemochromatosis, HIV, alcohol use, cigarette smoking, and estrogen use.[1,2,4]

Histologically, subepidermal blisters with cell-poor dermal infiltrate, multi-layering of basement membranes, and deposition of hyaline material in and surrounding blood vessels are noted.[1,3] As in the case of our patient, if there are concerns for infectious etiologies like secondary syphilis and bullous tinea, then appropriate stains including treponema pallidum as well as PAS-D stains should be considered. However, diagnosis is confirmed by characteristic porphyrin profile. Elevated levels of uroporphyrin 7-, 6-, 5-, and 4-carboxyl porphyrins in urine and plasma and elevated isocoproporphyrin in stool is suggestive of PCT.[4,5]

Treatment is multifactorial but always involves photoprotection.[1,3] Iron load reduction with phlebotomy or chelation therapy is very effective.[1,3,5] Antimalarial therapy with low dose chloroquine or hydroxychloroquine is therapeutic by forming a porphyrin-antimalarial complex that can be excreted through the kidneys.[1, 3] Smoking cessation is encouraged, and iron, alcohol, and other hepatic toxins should be avoided.[2] In patients with concomitant hepatitis C or HIV infection, treatment should be pursued.[2,4,5]

The clinical and economic ramifications of PCT can be significant. In addition to morbidity from itching and painful lesions, the manifestations of PCT can be disfiguring, leading to social stigma, anxiety, and isolation and often loss of livelihood like our patient. Delayed diagnosis and/or treatment may further exacerbate the biopsychosocial consequences. This highlights the importance of a thoughtful differential beyond just immune-bullous diseases when evaluating patients who present with blistering disorders. Our patient had multiple risk factors consistent with PCT and a clear photo distribution of lesions which proved key in shaping the differential. Through effective cross disciplinary communication we were able to order the appropriate studies that facilitated both a

quick diagnosis and treatment plan. In closing, this case illustrates a classic example of PCT and is representative of the profound response to therapy that can be achieved by a motivated patient and effective integrated care.

Conflict of Interest Disclosures: None

Funding: None

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