

Hepatitis C Treatment and Alopecia Totalis

Carolyn Goh¹

Peg-interferon alpha-2a and 2b and ribavirin have become the mainstays of chronic hepatitis C treatment. Although various cutaneous side effects have been reported, alopecia areata in its various forms have rare reports and has not been well categorized. Here we present a case of alopecia universalis occurring shortly after treatment for chronic hepatitis C, and we discuss some of the implications this has in understanding the pathophysiology of alopecia areata.

Journal of Investigative Dermatology Symposium Proceedings (2013) **16**, S59–S60; doi:10.1038/jidsymp.2013.24

PRESENTATION

A 59-year-old gentleman with a history of patchy alopecia areata presented with sudden onset alopecia totalis/universalis within 2 weeks after discontinuing telaprevir, peg-interferon alfa-2a, and ribavirin therapy for chronic hepatitis C.

HISTORY

He was diagnosed with hepatitis C at the age of 17 years, but his disease progressed, prompting treatment with triple therapy. He also had a history of hyperthyroidism possibly due to Graves' disease, which had been stable for 15 years on methimazole, and a history of epilepsy well controlled on lamotrigine for about 10 years. He had a history of allergic rhinitis as well. Before starting triple therapy, the thyroid was destroyed through radioablation.

The patient was treated for a total of 6 months. During the first 3 months, he was on all three medications, then peg-interferon-alfa-2a and ribavirin were continued for an

additional 3 months. He reported a slight diffuse increase in hair shedding throughout therapy but no clear patches. He was not evaluated by dermatology at that time. Of note, he was hospitalized for sepsis about 3 months into the treatment. After completing the therapy, he reported rapid hair loss in clumps, which ended in near complete loss of hair on the scalp, eyebrows, eyelashes, and beard. He retains some body hair. Four months after completing triple therapy, he presented to dermatology clinic noting no significant hair regrowth.

EXAMINATION

On examination, he had scattered white and gray terminal hairs on the scalp and complete eyebrow, eyelash, and beard loss with no evidence of scarring. There were a few patches of non-scarring alopecia on the upper and lower extremities.

INVESTIGATIONS, MANAGEMENT, AND OUTCOME

Thyroid function tests were within normal limits. Antinuclear antibody was <1:40. The patient has declined treatment.

DISCUSSION

Interferon-alfa treatment, with and without ribavirin, has been linked to the exacerbation or onset of several autoimmune conditions, including thyroid disorders and insulin-dependent diabetes as well as hair loss, including patchy alopecia areata, telogen effluvium, and injection site alopecia (Tosti *et al.*, 1992; Kartal *et al.*, 2007). Telaprevir is a newer protease inhibitor, which is associated with a severe and characteristic rash but has not been associated with alopecia of any type. Five cases of alopecia totalis or universalis during peg-interferon alfa-2a and ribavirin therapy for chronic hepatitis C have been reported in the literature

Table 1. Cases of alopecia universalis (AU) during hepatitis C treatment

Reference	Age	Sex	Medications	Time to onset of AU	Time to recovery	Length of treatment	Anti-TPO Abs
Taliani <i>et al.</i> , 2005	40	F	Peg-IFN2a, RBV	6 months	5 months, with corticosteroids	26 weeks	Unknown
	36	F	Peg-IFN2b, RBV	9 months	6 months, spontaneous	48 weeks	No
Demirturk <i>et al.</i> , 2006	57	M	Peg-IFN2a, RBV	6–9 months	9 months to 1 year	48 weeks	Yes
Kartal <i>et al.</i> , 2007	34	F	Peg-IFN2a, RBV	4 months	3–8 months +	48 weeks	Yes
Shafa <i>et al.</i> , 2010	71	F	Peg-IFN2a, RBV	3 months	Never	3 months	Unknown

Abbreviations: F, female; IFN, interferon; M, male; RBV, ribavirin; TPO Ab, thyroid peroxidase antibody.

¹Division of Dermatology, Department of Medicine, David Geffen School of Medicine at UCLA Medical Center, Los Angeles, California, USA

Correspondence: Carolyn Goh, Division of Dermatology, Department of Medicine, David Geffen School of Medicine at UCLA Medical Center, 200 Medical Plaza Driveway, Suite 450, Los Angeles, California 90095, USA. E-mail: cgoh@mednet.ucla.edu

(Taliani *et al.*, 2005, Demirturk *et al.*, 2006; Kartal *et al.*, 2007; Shafa *et al.*, 2010) (Table 1). All cases except one showed complete regrowth within about 1 year of discontinuing therapy. One patient had been treated with interferon-alfa monotherapy in the past with associated alopecia of unknown type (Shafa *et al.*, 2010).

This case stands out as the first reported case with a previous history of alopecia areata unrelated to interferon, and the first to have onset after therapy was discontinued. These cases represent a striking adverse event with significant clinical implications for patients undergoing treatment for chronic hepatitis C. The immunological implications regarding the role of interferon alpha in triggering alopecia areata onset, recurrence, and/or progression outside the context of hepatitis C is also of great interest and could elucidate some of the mechanisms behind this common disease.

CONFLICT OF INTEREST

The author states no conflict of interest.

ACKNOWLEDGMENTS

Funding for the Summit and publication of this article was provided by the National Alopecia Areata Foundation.

REFERENCES

- Demirturk N, Aykin N, Demirdal T, Cevik F (2006) Alopecia universalis: a rare side effect seen on chronic hepatitis C treatment with peg-IFN and ribavirin. *Eur J Dermatol* 16:579–80
- Kartal ED, Alpat SN, Ozgunes I, Usluer G (2007) Reversible alopecia universalis secondary to PEG-interferon [alpha]-2b and ribavirin combination therapy in a patient with chronic hepatitis C virus infection. *Eur J Gastroenterol Hepatol* 19:817–20
- Shafa S, Borum ML, Igiehon E (2010) A case of irreversible alopecia associated with ribavirin and peg-interferon therapy. *Eur J Gastroenterol Hepatol* 22:122–3
- Taliani G, Biliotti E, Capanni M, Tozzi A, Bresci S, Pimpinelli N (2005) Reversible alopecia universalis during treatment with PEG-interferon and ribavirin for chronic hepatitis C. *Chemotherapy* 17:212–4
- Tosti A, Misciali C, Bardazzi F, Fanti PA, Varotti C (1992) Telogen effluvium due to recombinant interferon alpha-2b. *Dermatology* 184:124–5