

# Albendazole-induced anagen effluvium



Mondana H. Ghias, BS, Bijal D. Amin, MD, and Allison J. Kutner, MD  
Bronx, New York

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## INTRODUCTION

Anagen effluvium is a nonscarring alopecia that often presents after a toxic or inflammatory insult fractures the hair shaft. Anagen effluvium may be triggered by chemotherapeutic agents (antimetabolites, alkylating agents, and mitotic inhibitors) and usually occurs within 14 days of treatment. The effects are generally reversible, with hair regrowth upon discontinuation of the offending agent.<sup>1</sup>

In contrast, telogen effluvium is caused by the premature shift of anagen hairs into the resting phase.<sup>2</sup> Precipitating factors include medications, physical or psychological stressors, hospitalization, and pregnancy.<sup>1</sup> Although albendazole has a relatively benign side-effect profile, rare occurrences of anagen and telogen-effluvium have been described with this medication.<sup>3,4</sup>

## CASE REPORT

A 74-year-old woman with a medical history of asthma, coronary artery disease, chronic kidney disease, and non-insulin-dependent type 2 diabetes mellitus, presented with rapid-onset, acute hair loss of the scalp and body (including eyebrows, chin, extremities, and genitalia). Hair loss began 2 weeks after completing a 5-day course of albendazole, 400 mg every 12 hours, for positive serology for *Toxocara* antibodies. She had no previous history of hair loss and was otherwise asymptomatic, without recent life stressors, hospitalizations, surgeries, or other new medications. Initial examination found generalized distribution of decreased hair density on the scalp without associated erythema, scale, or scarring (Fig 1, A). Follicular ostia were intact, and hair pull test was positive. Two weeks later, hair loss was significantly worse with

generalized alopecia. Trichoscopy showed no evidence of yellow dots or exclamation mark hairs to suggest rapidly progressive alopecia areata. A scalp biopsy was performed, and she was empirically treated with topical minoxidil. This patient was lost to follow up in our dermatology office; initial follow-up 1 month after initial presentation showed mild improvement of hair regrowth, but the patient did not follow up thereafter.

Microscopic examination of hair follicles found full pigmentation of the proximal hair shaft, with intact inner and outer root sheaths, consistent with anagen hair. Histopathology found an increased number of catagen follicles, supporting a diagnosis of anagen effluvium, and pigmented hair casts, consistent with trichotillomania. However, the latter finding may also be caused by traumatic alopecia, as the patient reported pulling out her hair once she noticed how easily it was falling out. Additionally, pigmented casts may also be seen with alopecia areata and anagen effluvium.<sup>5</sup> It would be unlikely that a patient with trichotillomania could remove such a large volume of scalp hair (Fig 1, B) or present with diffuse hair loss on other areas of the body.

## DISCUSSION

Albendazole is a benzimidazole drug commonly prescribed against helminths (echinococcosis, strongyloidiasis, and toxocariasis). The side-effect profile of this medication is generally mild, including nausea, abdominal pain, and laboratory abnormalities (elevated transaminases [10%-20% of patients], leucopenia, neutropenia, and proteinuria). Reportedly, all of these side effects resolve with cessation of therapy. Few cases of alopecia have

From the Division of Dermatology, Department of Internal Medicine, Albert Einstein College of Medicine.

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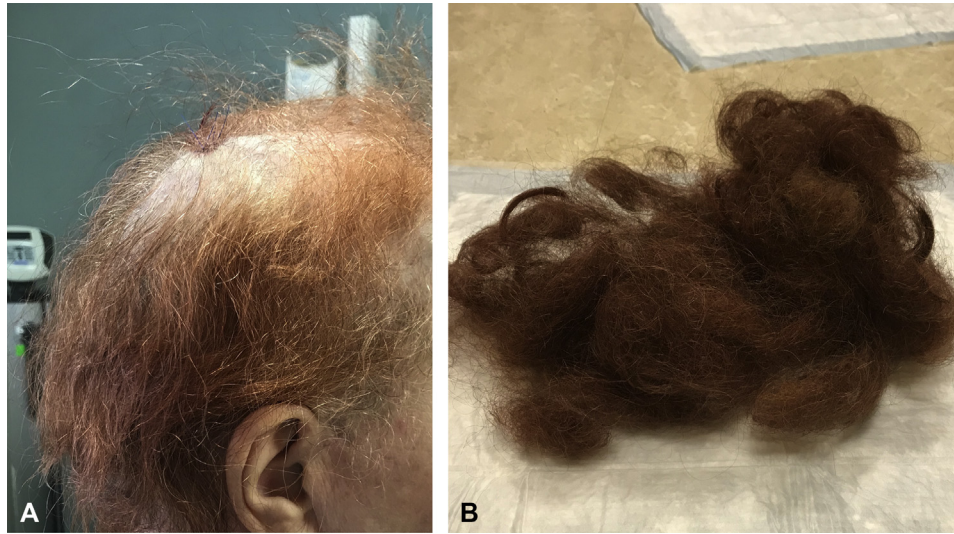
Correspondence to: Allison J. Kutner, MD, 3411 Wayne Avenue, 2<sup>nd</sup> Floor, Suite D, Bronx, NY 10467. E-mail: [akutner@montefiore.org](mailto:akutner@montefiore.org).

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**Fig 1.** Albendazole-induced anagen effluvium. **A**, Diffuse alopecia of the scalp. **B**, Patient presented a plastic bag with a large volume of acute hair loss 2 weeks after albendazole treatment.

been reported in patients with echinococcus treated with prolonged duration of high-dose albendazole (>800 mg/d).<sup>6-8</sup>

This phenomenon was previously described in a 70-year-old man treated with albendazole for echinococcus granulosis. On the 20th day of therapy at 15 mg/kg/d, the patient noted complete loss of all body hair, and albendazole was discontinued. This adverse event was reversible and the patient improved 1 month after cessation of the offending agent.<sup>3</sup>

A case of telogen effluvium was reported in a 25-year-old woman 2 months after albendazole treatment for cutaneous larva migrans. She was treated with 2 courses of oral albendazole, 400 mg/d for 1 week. On physical examination, alopecia of the scalp was seen without erythema, scaling, crusts, or scars. Hair follicles assessed after pull test were telogen club hairs; anagen hairs were not present. The ratio of plucked hairs on trichogram analysis was 85% telogen to 15% anagen. Histopathologic examination found terminal follicles, predominantly in catagen and telogen phase, and absence of inflammatory cells. Despite the high percentage of telogen hairs, diffuse alopecia areata was excluded because of the absence of perifollicular lymphocytic infiltrate. Other potential causes of telogen effluvium (diet/malnutrition, psychiatric, high and prolonged fever, shock, anemia, thyroid disease) were also excluded. This patient was not treated, but the alopecia was in complete remission within 3 months.<sup>4</sup>

Histopathologic evaluation may distinguish anagen and telogen effluvium based on the anagen-to-

telogen ratio, with greater than 15% telogen, suggesting a diagnosis of telogen effluvium.<sup>1</sup> This was not seen in our patient, with less than 15% of hair follicles in telogen. The timing of hair loss (within 14 days) and increased number of catagen follicles seen on pathology were most consistent with anagen effluvium. Telogen effluvium would present with a 2- to 4-month delay after initiating the offending medication.<sup>2</sup> Although diffuse alopecia areata and alopecia universalis cannot be excluded based on the histologic presence of pigmented hair casts,<sup>5</sup> or absence of perifollicular lymphocytic infiltrate,<sup>9,10</sup> the clinicopathologic findings and timing of hair loss with respect to albendazole therapy are more suggestive of anagen effluvium. No additional causes of alopecia were identified in this case. Although there is currently no effective treatment for anagen effluvium, symptoms are generally reversible with discontinuation of the causative agent.<sup>1</sup>

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