



HAIR DISORDERS

GAIN-SWITCHED 311-NM TI:SAPPHIRE LASER TREATMENT FOR ALOPECIA AREATA: A PILOT STUDY

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Background: Alopecia areata (AA) is an autoimmune skin disorder causing hair loss and has a large impact on patients' quality of life. Laser treatment including 308-nm excimer laser has an advantage in treating AA in a targeted manner. Recently, a gain-switched 311-nm Titanium:Sapphire laser (TSL) was developed and demonstrated similar therapeutic efficacy to excimer laser in the treatment of vitiligo.

Objective: We evaluated the effectiveness and safety of the 311-nm TSL in the treatment of AA.

Materials and Methods: We conducted an open trial and enrolled 16 AA patients between June 2017 and December 2018. A 311-nm TSL laser treatment was conducted once or twice a week. The dose started at 300 mJ/cm² and increased by 50 mJ/cm² in each subsequent session until post-treatment erythema occurred. In some patients, prior medical treatments were not discontinued to maintain the existing therapeutic effect.

Results: Among the 16 enrolled AA patients, three had alopecia totalis (AT). The patients received a median of 12 sessions (range 4-35 sessions) of TSL treatment. Eleven patients (68.8%) showed excellent to complete ($\geq 75\%$) hair regrowth after medians of 11 (range 6-35) treatments for 4 (range 2-12) months. Of the remaining 5 patients, 3 had good (50-74%, n = 1) or moderate (25-49%, n = 2) hair regrowth. The other 2 patients who had AT showed no hair regrowth. There were no serious adverse events to stop the treatment.

Conclusions: The 311-nm TSL treatment has several advantages over conventional AA treatments such as intralesional corticosteroid injection and topical corticosteroid. It provides non-invasive, pain-free treatment to AA patients, without any risk of adverse drug reaction. In particular, TSL treatment has great benefits for children who worried about painful treatment.

