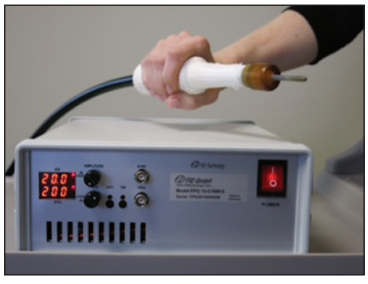
Moving Toward a More Tolerable Treatment for AK

A conversation with Peter Friedman, MD, PhD about non-thermal, atmospheric pressure plasma.

Treating actinic keratosis (AK) remains a clinical conundrum as most available therapies confer significant downtime and involve a very visible recovery, which serves as a barrier for many patients. Left untreated, however, AK may turn into squamous cell carcinoma.



Practical Dermatology® magazine talked with Peter Friedman, MD, PhD, who is working with a group of engineers and physicists at Drexel University in Philadelphia to develop a non-thermal, atmospheric pressure plasma (NTAP) device to treat AK lesions and potentially skin cancers.

Why study AKs?

Dr. Friedman: AKs are very common and the incidence is increasing. We don't have fantastic treatments, and most of our treatments have pretty unpleasant side effects such as scabbing, pain, irritation, and crusting. Many patients with chronic sun damage and recurring AKs dread their office visits. We believe that successfully treating actinic keratoses may lead us to treat squamous cell carcinomas.

Why non-thermal, atmospheric pressure plasma (NTAP)?

Dr. Friedman: This device is being studied in a number of conditions. We believe it can modulate the immune reaction in AK and essentially train the immune system to selectively induce apoptosis in precancer cells. Unlike chemical peels and photodynamic therapy (PDT), NTAP has excellent tolerability. There is no discomfort, so we can potentially treat a larger area without downtime. AK is usually in highly visible, sun-exposed areas, which can be a barrier to treatment. With NTAP, lesions kind of melt away. AKs are precancerous lesions so we set our sights high by studying them. We want to see this used in skin cancer, too. The Holy Grail would be a simple, painless way to treat skin cancer.

Our Initial results demonstrated the efficacy of NTAP treating in AK lesions. We treated 17 lesions. Nine showed full clinical resolution one month after the treatment. Three lesions significantly improved, and five showed minor or no improvement. None of the patients experienced any adverse effects related to the treatment. The findings appear in the February issue of the *Journal of The American Academy of Dermatology*.

How does NTAP treatment look in practice?

Dr. Friedman: Plasma is generated using a high-frequency device. We hold the device close to the lesion for the neccesary time. The time of therapy varies based on the number of lesions and/or surface area that we are targeting. It is painless for patients. The patients who participated in the study loved the treatment, as it was quick and painless. There was no visible change afterwards; they haven't experienced any post-treatment discomfort either. This was true for both groups: the ones where we treated individual lesions and the patients we are treating currently with field treatment.

What's next?

Dr. Friedman: We need to optimize treatment parameters, provide histologic confirmation of treatment effect, and evaluate the long-term benefits. We will need to include more patients to optimize the treatment parameters. We are also doing the basic science to understand how and why it works. It's all very exciting.

If validated, how may NTAP fit in with current treatment?

Dr. Friedman: AK treatment can be mixed and matched based on the characteristics of the patient and the disease. NTAP can at least be added to our armamentarium of treatments if not become the gold standard. ■

Peter Friedman, MD, PhD is in private practice and an Instructor in Clinical Dermatology at the Department of Dermatology, Columbia University, New York Presbyterian Hospital in New York City.