throughout medicine, non-surgical or minimal surgical alternatives to traditional surgical therapies have proliferated in the past 10 years thanks to advances in technology. Endoscopic browlift and laparoscopic cholecystectomy, cardiac surgery without bypass, and endovenous laser for saphenous vein closure come to mind. Still, adequately and completely removing solid tumors without cold steel is difficult. Here I will review some strategies for dealing with non-melanoma skin cancer without surgery.

Why would dermatologists want to treat patients without surgery? Patients with bleeding diatheses, multiple skin cancers, difficult-to-treat areas, or overall poor health are traditionally good candidates for non-surgical interventions. However, the desire for improved cosmesis has come to the fore as an issue in matching patients to therapies. Along with advances in minimally invasive technologies in other areas, our patients want us to consider alternatives that allow them to avoid going under the knife.

Precursor Lesions

There are two different ways to view AK and Bowen’s disease. Some view them as squamous cell carcinoma in situ and others view them as precursor lesions. Deciding whether treatment of AK/Bowen’s addresses early cancer or prevents progression of a precursor lesion is difficult; in my mind it is an academic point. Many types of cancers have a multi-step etiology. It is common practice in other areas of medicine to monitor and treat precursors. Pap smears and treatment of cervical dysplasia and colonoscopy with removal of polyps are two obvious examples. Early detection and removal of precursors is the hallmark of all cancer prevention strategies, so first we will deal with attempts to reverse progression of early skin cancer.

There are well-known and studied treatments of AK/Bowen’s, mainly involving topical 5FU (Efudex, Valeant; Carac, Dermik) chemotherapy as well as imiquimod (Aldara, 3M). The first bases itself on destruction of rapidly dividing cells, the second on stimulating the immune system to produce cytokines that destroy abnormal cells. In the past few years, PDT has entered the fray. It is a procedural method based on photochemotherapeutic targeting of rapidly dividing cells. Probably the most common treatment of AKs is liquid nitrogen or occasionally, in the case of a hypertrophic lesion, electrocautery and curettage.

Developing a personal treatment algorithm for these lesions helps guide your clinical encounters. As with other diseases, notably psoriasis, our choices for therapy have thankfully exploded exponentially, but that makes the decision-making more complex both for you and your patients.

I believe in involving patients in the decision-making process and giving them choices. This, however, takes time. Many patients will want you, the doctor, to make the decision. But most appreciate having options. Here is what I tell patients and how the conversation usually proceeds:

“You have a precancerous lesion that is caused by sun damage.”

“But, Doctor, I haven’t been in the sun for 20, 30, 40 years!”

“Yes, but sun damage expresses itself in a delayed fashion, so the damage you are seeing now may be from your teenage years. You did go in the sun then, didn’t you?”

“It can turn into a skin cancer that could spread so it can be serious. On the other hand, this could take many years to occur and most of the time surgery will cure the cancer, so it isn’t an emergency. Still, it is important to take care of these as you are likely to get more. It is also important for you to avoid the sun and use sun protection to prevent further damage.”
If patients have only a few lesions (less than five) I will give them the choice of topical therapy or cryotherapy: “If you choose topical therapy, you will heal beautifully but you will have three to four weeks of inflamed skin in the area of the keratoses. If you have cryotherapy, you will heal in less than a week but there is the potential for permanent white marks on your face.”

Of course, patients don’t really like the choice, but there it is. You can’t take away the negatives, and if you don’t warn them in advance, then you aren’t their ally in the fight against skin cancer.

Now, you could give them the choice of Levulan (ALA, DUSA Pharmaceuticals) PDT: “You will come in and we will apply an FDA approved clear liquid medication to your face. It will sit on there for about 45 minutes to one hour and then you will be exposed to a light or a laser. You will need to stay indoors for 48 hours and you may experience a sunburn-like reaction that will last a couple of days or less commonly a week.”

They will choose the PDT at least three-quarters of the time, purely due to the less-hassle factor. They weigh it thus: no chance of scarring, I don’t have to mess with the cream and look bad for three weeks, and I just need a few days.

Typically we have PDT-treated patients return at four to six weeks for a re-check. Three things set PDT apart from the other therapies. First, patients don’t hate it. Most people’s experiences with 5FU and imiquimod are unpleasant. If you compared using 5FU to the total face versus PDT, that number would increase. Head-to-head studies of 5FU vs. PDT for AKs found the effica-
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Second, you are destroying preclinical lesions, so you are doing a lot of prevention. Why have someone come back to your office every three months to have more AKs frozen? This does not seem like an optimal use of your time or your patients’ time. How many patients have you instructed to use their 5FU to the total face? This might be their best option for eradicating the precancers, but it is not practical.

Third, cosmesis is much better with PDT. Although 5FU often does improve cosmesis as well, my experience has been that for people with significant damage postinflammatory erythema can last for many months. I have been struck at how patients who have experienced PDT subsequently want to take better care of their skin via topical anti-aging products and better compliance with sun protection.

Although Bowen’s disease may be one step further along the continuum toward SCC, the above discussion applies to it as well. Studies bear out the efficacy of PDT, 5FU, and imiquimod for Bowens. Since these lesions are typically slightly larger and a bit thicker, liquid nitrogen (without cryoprobes) would not be a first choice here, although electrodesiccation and curettage could be utilized.

Basal Cell Carcinoma

With basal cell carcinoma, one has to consider the three types—superficial, nodular, and sclerosing—separately. Superficial BCC responds well to all three of the modalities that we have discussed above (topical 5FU, imiquimod or PDT). Since the lesions are localized and often not on the face, there are fewer issues with downtime and discomfort, although I have seen some truly explosive responses with imiquimod (inflammation well beyond the border of the tumor). Blue light PDT may not provide sufficient effect due to limited depth of absorption; fronds of abnormal cells can extend into various depths of the dermis. For superficial BCC, IPL, red light, or vascular laser PDT may be more effective. The fact that tumors are typically broad and flat limits the usefulness of electrodesiccation and curettage due to poor cosmesis, although it will adequately clear the tumor.

Treating nodular basal cell carcinoma with non-surgical methods is still experimental, unless you consider radiation therapy, electrodesiccation and curettage, or cryotherapy with cryoprobes. For the purposes of this paper, I will consider anything not using a scalpel or electrocautery non-surgical.

There is much work in the European literature on the treatment of BCC with PDT. Much of it centers on difficult-to-treat...
lesions in the so-called H-zone of the face, where large excisions result in cosmetic impairment. The literature as a whole suggests an approximately 10-35 percent chance of recurrence at 12-24 months after treatment of nodular BCC in these areas. The higher end of the recurrence rate is from studies involving only one treatment.2-4

Most protocols in Europe for nodular basal cell carcinoma involve two treatments. One particularly well done study comparing PDT to surgery (101 total patients treated) reported five recurrences in the PDT arm by 24 months and only one in the surgical arm. However, there was a statistically significant difference in the cosmetic outcome for the two therapies at both 12 and 24 months based on patient and physician raters (better in the PDT arm). Note that 24 percent of patients in the PDT arm needed a second treatment at one month.5

I was privileged this past summer to visit the clinic in Regensburg, Germany of Dr. RM Szeimies, an international expert on the use of PDT for BCC. They treat BCC two times over the course of two weeks using three-hour incubation under occlusions with MAL (methyl aminolevulinate, Metvix) and 10 minutes of red light (see photos).

A recent review of all the literature up to 2004 on the treatment of skin cancer concluded that PDT is appropriate for AK and superficial BCC but that the higher recurrence rate for nodular BCC made it inferior to Mohs or excisional surgery.6 Interestingly, an Australian study of surgery vs. PDT for BCC showed that there was a statistically significant difference with PDT over surgery with respect to cosmesis at 12 and 24 months. A definite majority of patients in this study would choose PDT over surgery based on this fact, despite knowledge of a higher chance of recurrence.6

A report of two cases of basal cell nevus syndrome showed that both patients had a significant reduction in lesions as well as prevention of the development of new lesions after treatment with blue light and 20% 5-ALA (Levulan). Another study of three children with this condition led the authors to conclude that PDT was the treatment of choice for pediatric basal cell nevus syndrome. In patients such as these where surgery is impossible for every lesion, treatment with PDT for BCC makes sense.7

There have been reports of successful treatment of BCC and SCC with intralesional 5-fluorouracil.7 Most cases involved injections of a fluoruracil-epinephrine gel either once or three-times weekly with cure rates of 96 percent at four months and excellent cosmesis. One author recommends 0.8-2.4cc of 5-FU injected each week for eight weeks. I had a patient with more than 20 SCCs who had a bleeding diathesis from advanced hepatitis C that made surgery impossible. Intralesional treatments with 5FU every third week cleared the majority of her tumors over a period of nine months. Take care to monitor the total dose, as systemic side effects of this regimen can occur, including nausea, diarrhea, and mouth ulcerations among others.

Radiation therapy is another non-surgical choice for the treat-
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Intralesional interferon alpha-2b is another alternative method for BCC treatment. Although a number of studies have demonstrated limited efficacy, the number of treatments (12-24 over 4-8 weeks) the side effects (myalgias, arthralgias and fever) and the cost may limit its usefulness.

Cryotherapy has long been known to be very effective for BCC. A 1998 study of 92 patients showed a recurrence rate of only 2.7 to 2.9 percent for BC and SCC. As with all non-surgical treatment of NMSC, close follow-up for at least two years is recommended.10

The Role of Retinoids
Oral and topical retinoids are recommended for very high-risk patients. Multiple studies have shown modest to significant reduction of development of SCCs with acitretin 25mg/day over a three to four year period. Advantages for BCC have not been as well documented, although a recent animal model study showed a very strong reduction in development of BCC with topical tazarotene. Limitations of oral retinoids include side effects and the potential for aggressive rebound of SCCs after discontinuation of the drug.11-13

Growing Demand
If your patients can’t for any reason undergo surgery, or if they are especially sensitive to cosmetic concerns, consider one of the non-surgical options. These include intralesional chemotherapy, intralesional immunostimulation, cryotherapy, radiotherapy, and PDT. PDT is burgeoning and being studied extensively. It is currently widely used in Europe for BCC, perhaps because the Europeans have access to the approved red light and the cream based form of methylaminolevulinic acid (MAL). In the future, I predict that patients will be asking for non-surgical treatments to preserve the understanding that long-term careful follow-up will be necessary so that recurrences can be detected early and treated appropriately.18