A diagnosis of melanoma can incite significant anxiety for patients. While dermatologists recognize that the majority of melanomas are effectively eradicated without compromising the patient’s overall health, the diagnosis can be distressing for a clinician, as well. With the emergence of new diagnostic approaches and sometimes apparently conflicting recommendations for long-term follow-up, dermatologists sometimes fret over the appropriate course of action for a particular patient.

Dermatologists need not second-guess their approach to melanoma patients, provided they act within the standard of care. The following review of current accepted approaches to diagnosis and patient care, along with discussion of emerging and adjunctive measures, will help dermatologists confidently and effectively guide patients through the process of melanoma management.

By Jonathan Wolfe, MD
Assessing the Pigmented Lesion

Dermatologists are familiar with the risk factors for melanoma (Table 1). As evidenced by the recent addition of “E” for evolution to the ABCD criteria for lesion assessment, change in the shape, color, size, or symptomology of a lesion represents a significantly increased risk of melanoma. In fact, a changing mole has one of the highest estimated relative risks out of all risk factors for melanoma.

It is impossible to over-emphasize the importance of a thorough personal and family history in determining the patient’s risk for melanoma. Once we review and assess each of the individual patient’s risk factors for melanoma and make personal clinical observations of the lesion, we must decide whether or not a biopsy is indicated. Each of us has established a threshold of suspicion above which we biopsy, below which we opt to follow the lesion over time. The most challenging cases for dermatologists are those that approach but do not meet this suspicion threshold.

Numerous imaging techniques have been developed with the ultimate goal of helping dermatologists in the clinic assess these suspicious lesions. Some technologies, such as laser microscopy, are quite effective but limited to large academic, research centers. Others, such as computer-assisted dermoscopy and multi-spectral imaging, have not quite reached the mainstream. These latter techniques show promise, but they require the purchase and use of specially designed technology that few offices currently possess. Hand-held dermoscopy, however, is a widely employed and inexpensive technique that can be quite useful in the assessment of suspicious lesions.

It’s important for clinicians to understand the true role and potential value of dermoscopy. It should not be routinely applied to assess all pigmented lesions, as such an approach would be ineffective and inefficient. Alternatively, dermoscopy is not a replacement for biopsy. Rather, dermoscopic observation can provide information that helps the dermatologist decide whether to biopsy or follow a lesion.

Dermoscopic evaluation employs a point-system based on ABCD-criteria similar to those used for unaided visual assessment of lesions. A few grading systems have been proposed, though they are all similar. Importantly, the dermatologist relies on his or her assessment of both the plainly visible and dermoscopic evidence to determine whether to biopsy any given lesion. In practice, the information obtained from dermoscopy is used to support the dermatologist’s initial reaction to an atypical mole.

Dermoscopy in the hands of experienced clinicians can increase the diagnostic sensitivity for melanoma by 35 percent compared to clinical examination alone. In a recent study, investigators used a simplified approach to dermoscopy by selecting what appeared to be the three most important features that help distinguish benign from malignant pigmented skin lesions. These criteria were asymmetry of color, an atypical pigment network with irregular holes and thick lines, and the presence of blue or white colors. Using this checklist, the diagnostic sensitivity was 96 percent, however the specificity was only 33 percent. If dermoscopic features were combined with clinical impression, the specificity increased to 83 percent. In any event, it is clear that dermoscopy along with

---

**Table 1. Melanoma Risk Factors**

- Family history of melanoma
- Dysplastic nevi
- Personal history of melanoma
- Immunosuppressive therapy
- Multiple nevi (more than 50)
- History of severe, blistering sunburns
- Freckles
- Fair skin, light eyes

**Table 2. Recommended Margins for Excision**

<table>
<thead>
<tr>
<th>Thickness (Breslow)</th>
<th>Margin</th>
</tr>
</thead>
<tbody>
<tr>
<td>In situ</td>
<td>0.5cm</td>
</tr>
<tr>
<td>&lt; 1mm thickness</td>
<td>1.0cm</td>
</tr>
<tr>
<td>1-2mm thickness</td>
<td>1-2cm</td>
</tr>
<tr>
<td>2-4mm thickness</td>
<td>2cm</td>
</tr>
<tr>
<td>&gt; 4mm thickness</td>
<td>2cm</td>
</tr>
</tbody>
</table>

National Comprehensive Cancer Network recommendations

28 Practical Dermatology November 2005
Clinical and historical characteristics are the mainstay for making a diagnosis for melanoma. Digital dermoscopy—recording dermoscopic images to a computer in order to track changes in the dermoscopic features of that lesion over time—continues to grow in popularity as the cost of digital imaging equipment continues to fall. As it grows in popularity, this might become a worthwhile approach to long-term management of patients with multiple atypical moles of moderate clinical suspicion.

Another option to follow patients with multiple atypical moles may be full body photography. This is an effective and worthwhile way to document the current appearance of lesions in order to identify changes (size, color, shape, etc.) over time. For one to two lesions, a dermatologist can use high-quality digital photography equipment within the office to capture images of an atypical mole. Full-body photography is a much more sophisticated undertaking that necessitates the skill of a specially trained, professional photographer, proper lighting and sequencing, a studio setting, and other skills generally lacking among clinical staff.

Confirming the Diagnosis

With the need for biopsy established, the clinician next must decide on the biopsy technique. It’s widely accepted that excision, when possible, is the best approach, as it provides the best sample for microscopic evaluation. Gathering as much tissue as possible for analysis improves the likelihood of properly identifying pathologic features. Punch biopsy may be necessary in areas where excision would risk significant cosmetic or functional impairment. However, to avoid sampling error, multiple biopsy sites from different quadrants of the mole should be considered to maximize tissue sampling and minimize selection biases.

To maximize tissue sampling in the busy office setting one could argue that deep shave excisional biopsies are not contraindicated. Although not optimal and certainly frowned upon in training, deep shaves may need to be clinically considered in the right cosmetic location (i.e., back, chest, abdomen, etc.) when clinicians are faced with time, diagnostic, and therapeutic pressures.

The patient’s insurance generally determines the choice of dermatopathologist. When there is flexibility, choose someone you know and trust. Provide the pathologist as much clinical data as possible. Do not hesitate to include notes and/or questions for the pathologist along with the sample.

Many dermatologists fail to recall that dermatopathology is not a case of simply looking at a slide and rendering a diagnosis. Pathologists consider the clinical data and sometimes entertain a range of possible diagnoses. There is some level of subjectivity in the final reporting. Therefore, you must understand what the pathologist looks for and how he or she grades lesions. Most pathologists grade samples on a scale of atypia, with which you must have some knowledge. Some may use terms in reports that have non-specific or variable meanings. Be certain that you understand the pathologist’s scale and what he or she means when employing certain terminology. Never hesitate to contact the pathologist or request additional information.

Generally, I do not use the word “melanoma” with the patient during the initial office visit, rather I prefer to use the term only when I have a biopsy-confirmed diagnosis. To mention “melanoma” could induce a great deal of undue distress and anxiety for the patient. (See this month’s Oncology Watch column on p. 54 for some addition insights on education and counseling for patients with melanoma.)

Simply taking a biopsy can lead to some degree of anxiety for many patients. I believe it is best to inform the patient of a firm diagnosis, and if re-excision is indicated, have the patient back as soon as possible from the initial visit. This proposed timeframe is based on a patient care perspective (limiting the duration of anxiety and patient’s perceived “danger” of delayed intervention) rather than any compelling scientific evidence that longer durations would lead to a worse prognosis.

Additional Workup/Follow Up For The Newly Diagnosed Melanoma Patient

Management of the patient with a biopsy-confirmed melanoma varies from patient to patient. Melanoma in situ is relatively easily managed through re-excision and appropriate clinical follow-up. Thicker melanomas require surgical consideration of margins. Current recommendations for margins appear in Table 2. Treatment of areas at high risk for functional or cosmetic impairment may require plastic surgical consideration. At this point, the Mohs technique for melanoma or Lentigo Maligna melanoma on the face is an evolving entity due to fresh tissue staining limitations.

Thicker, more involved melanomas certainly may require additional testing or the presence of risk factors would perhaps suggest a need for Sentinal Lymph Node Biopsy.
interventions beyond excision. A majority of the time, baseline laboratory values are indicated independent of melanoma thickness, although certainly in some cases, additional lab testing when thin melanomas are diagnosed may not be necessary particularly in the cost-cutting environment that we are faced with in today's world.

Chest X-ray. Chest radiographs are standard for patients at risk for pulmonary metastasis. The X-rays are intended to identify early neoplasms and are sensitive enough to accurately identify micrometastases. Interestingly, one study found that the earlier detection of pulmonary metastasis in otherwise asymptomatic individuals did not improve survival.7

Sentinal Lymph Node Biopsy. Compared to the previous system, current staging of melanoma relies more heavily on the thickness of lesions in determining the stage—and subsequently treatment recommendations and long-term prognosis—of melanoma (Table 3). Any patient with a melanoma greater than 1.0mm in thickness is a candidate for SLN biopsy. For melanomas in the 1.0mm range, there is no clear consensus. Although most patients with thin lesions do well, some suffer recurrence and eventually die of their disease. It is important to identify which patients are at risk for recurrence so they may be targeted for interventional therapy. The presence of risk factors would perhaps suggest a need for SLNB. Recently, a prognostic model for thin primary cutaneous melanoma suggested elevated odds of metastasis for men, those with vertical growth phase histopathologically, those with a high mitotic rate, and those with regression and ulceration. This would be in addition to thicker, Clark level III or IV or ulcerated lesions. In one series, four percent of patients with thin melanomas had positive SLNBs. Without

<table>
<thead>
<tr>
<th>Stage</th>
<th>Primary Tumor (T)</th>
<th>Regional Lymph Nodes (N)</th>
<th>Distant Metastasis (M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 0</td>
<td>Tis</td>
<td>N0</td>
<td>M0</td>
</tr>
<tr>
<td>Stage IA</td>
<td>T1a: Less than or equal to 1mm, Level II-III, no ulceration</td>
<td>N0</td>
<td>M0</td>
</tr>
<tr>
<td>Stage IB</td>
<td>T1b: &lt;1mm, Level IV-V or with ulceration</td>
<td>N0</td>
<td>M0</td>
</tr>
<tr>
<td>Stage IIA</td>
<td>T2b: 1.01-2mm, ulceration</td>
<td>T3a: 2.01-4mm, no ulceration</td>
<td>N0</td>
</tr>
<tr>
<td>Stage IIB</td>
<td>T3b: 2.01-4mm, ulceration</td>
<td>T4a: &gt;4mm, no ulceration</td>
<td>N0</td>
</tr>
<tr>
<td>Stage IIC</td>
<td>T4b: &gt;4mm, ulceration</td>
<td>N0</td>
<td>M0</td>
</tr>
<tr>
<td>Stage III</td>
<td>Any T</td>
<td>N1, N2, N3</td>
<td>M0</td>
</tr>
<tr>
<td>Stage IV</td>
<td>Any T</td>
<td>Any N</td>
<td>M1</td>
</tr>
</tbody>
</table>

• Note that presence of ulceration leads to upstaging.
• Clark level influences T1 subcategories only.

Based on AJCC 2002 grading system.
evidence of improved prognosis, is SLN indicated in this patient population? This is very debatable.\textsuperscript{9,10}

SLN biopsy is itself a potentially risky surgical procedure. Dermatologists must carefully weigh the potential for spread against the risks of the procedure as they counsel patients for whom biopsy is optional but not clearly indicated. Those dermatologists uncomfortable with or unfamiliar with such decisions should consult trusted colleagues or refer the patient to a melanoma group or academic center that may offer a wider range of patient care services.

SLN biopsy should be completed at the time of re-excision or as soon as possible following the procedure. Excision of the localized malignancy manipulates pathways of metastasis, potentially influencing results of a biopsy completed after excision.

Long-term Follow-up

We know that personal history of melanoma is a significant risk factor for development of a new melanoma. Therefore, appropriate patient follow-up is critical. All patients require education on appropriate methods for skin self-exams as well as for risk factor management (sun protection, etc.).

For the patient with melanoma in situ, follow-up twice a year for one to three years after excision, then annually. Those with more advanced melanomas or those at highest risk for recurrence (numerous moles, history of extensive sun exposure, etc.) should be followed three to four times per year for two to three years. Then graduate to two in-office exams each year. After five years, switch to annual exams.

The general recommendation is that women treated for melanoma should not become pregnant for about three years following treatment. The exact relationship between pregnancy and melanoma development is unclear, however there appears to be no direct association. Although controversial, recent studies have suggested that pregnancy has no adverse effect on survival in patients who have had melanoma develop during pregnancy. Pregnancy also does not adversely affect survival in patients with a history of melanoma who subsequently become pregnant.\textsuperscript{11} Dermatologists faced with a patient who is currently pregnant and presents with melanoma should immediately refer that patient to an expert on management of such cases.

Finally, in high-risk situations, consider photographic follow-up. As described above, this is a technically more advanced process than simply snapping photographs in the office. Find a trusted and experienced source that provides full-body photography in your area, probably at a nearby academic center. The photos are stored in electronic or print albums that patients will bring with them to subsequent office visits.

An Epidemic Response

Increasingly, the words “epidemic” and “melanoma” appear together in the same sentences. The notion of a melanoma epidemic stems from mounting reports that the rates for diagnosis of melanoma keep climbing. Importantly, though, mortality rates have remained level (if not dropping a bit in recent years). This highlights a few important points. First, and most promising, if detection is up but mortality is level, this suggests current management strategies are largely effective.

The data also suggest that there may be variants of melanoma—some that progress rapidly and some that progress quite slowly—though much more research is needed to support such speculations and if supported, identify associated prognostic factors. We must bear in mind that all of the incidence and mortality data may be influenced by length time bias (detection of less aggressive disease affects apparent survival rates; more aggressive disease is present for a shorter time) and lead time bias (mis-estimation of survival among screen-detected patients because of increased time from detection to death).

No doubt melanoma and skin cancer are a significant public health concern. Melanoma can be associated with significant morbidity and mortality. Thankfully, though, the majority of cases can be effectively managed with excision. Dermatologists must remain confident in their approach to diagnosis, treatment, and patient counseling so that patients can effectively combat melanoma.