

Early Detection and Treatment of Cutaneous Neoplasms

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Skin Cancer

- Arises from any part of the skin
- Skin cancer may involve the epidermis, dermis, neural crest, epidermal appendages, nerves, blood vessels, or any specialized cellular elements within these structures
- Most common

non-melanoma skin cancer (NMSC)

basal cell carcinoma

squamous cell carcinoma

melanoma

Skin cancer can come from any part of the cutaneous surface whether it be epidermis, dermis, neural crest, any appendage, sebaceous glands, apocrine glands, the cutaneous nerves or vascular supply. The most common, of course, are the non-melanoma skin cancers, including basal cell carcinoma and squamous cell carcinoma and melanoma.

The three most common types of skin cancer really arise from within the epidermis; squamous cell carcinoma within the spinous layer of the epidermis, basal cell carcinoma within the basal layer of the epidermis and hair follicles, and melanoma from the pigmented cells of the epidermis.

Incidence

- Difficult to accurately access, not all recorded
- Approximately 800,000 new NMSC annually in the US
- Approximately 36,000 new Melanoma annually in the US
- Skin cancer comprises 1/3 of all cancers diagnosed
- 1 out of 5 individuals will have a skin cancer in their lifetime

The incidence in skin cancer is actually hard to predict. There are not tumor registries for all non-melanoma skin cancers - for most melanomas there are - and we are trying to get tumor registries for all squamous cell carcinomas. There are approximately 800,000 non-melanoma and non-melanoma skin cancers in the US per year and there are 40,000 melanomas annually in the US. Just to give you an idea of the magnitude, about one-third of all cancers diagnosed are skin cancers and one out of every five individuals, or in your case, one out of every five patients you could cite will actually have a skin cancer at some point in their lifetime. This just reinforces why it is so imperative to be able to detect these since primary care physicians and internists are usually the front line of people that see patients.

Epidemiology

- More common in:

- fair skinned individuals

- outdoor workers or those with significant UV exposure

- certain genetic syndromes

- Albinism

- Basal Cell Nevus Syndrome

- Xeroderma Pigmentosa

- Incidence increased with decreasing latitude

Patients at higher risk. Anybody can get a skin cancer, but it is those who are fair-skinned Celtic, blond hair, red hair, freckles, very fair skin. Whenever they go out into the sun, they burn. Those are the people who are going to be at the highest risk. Those people who have a significant photo-exposure, whether it be people that work outside, people that have homes maybe down in the lower latitudes who get intermittent severe burns, those are the people that are going to be at higher risk. There are also some genetic syndromes you all have probably heard about; basal cell nevus syndrome, albinism, xeroderma pigmentosa. Rare genetic syndromes. However, those are people that really get showered with skin cancers. Of course, people that live in the lower latitudes, those people who live down south - Australia - they get real significant constant sun exposure.

Pathogenesis

Ultraviolet light plays a significant role in causing skin cancer but over the last five to ten years we've found that it is really multifactorial. There is a lot of genetic component of skin cancer. There are some genes that have recently been studied and it seems that it has to do with your cutaneous immunosuppression as well as sort of genetic factors and constant ultraviolet light exposure that cause skin cancer.

- Multifactorial
- Ultraviolet radiation especially UVB and UVA
 - causes cutaneous immunosuppression and DNA damage
 - clonal expansion of malignant cells
- Genotype and phenotype
 - skin color
 - genetic inability to repair DNA damage by UVR
 - inability to stop malignant cell cycles
 - defective tumor suppressor proteins
 - defective oncogene
- Environmental exposure
 - intermittent severe burns more associated with melanoma
 - chronic sun exposure more associated with NMSC
 - arsenic
 - immunosuppression

Death Rates

- Basal cell carcinoma

 - very rare, only with tumors > 10cm with rodent ulcers

- Squamous cell carcinoma

 - approximately 2100 annually in US

- Melanoma

 - approximately 7300 annually in US

Death rates for skin cancer. For basal cell carcinoma, it is essentially nonexistent. There are case reports of huge basal cell carcinomas when they are diagnosed around 10 cm or so that have been shown to have metastases and eventually the patients die. But, I usually tell my patients to reassure them since you are giving them the diagnosis of "cancer" that this really is a type that just about never... and I really could fairly confidently say for a small basal cell carcinoma that it would never metastasize or cause death whereas squamous cell carcinoma, it is a little bit more likely. Probably 2 to 5% of the time it can metastasize and there are about 2,000 deaths per year from cutaneous squamous cell carcinoma. Melanoma, as we all know, has a higher death rate and it is climbing annually.

Non-melanoma Skin Cancer

Basal Cell Carcinoma

- Malignant neoplasm of germinative epithelial cells -basal layer of epidermis -germinative cells of hair follicles
- 600,000 cases per year in US
- Rarely metastasize (<0.025%) but can cause extensive tissue damage
- BCC/SCC 4:1
- 4 main types
 - nodular, superficial, morpheaform, pigmented
 - graded on histologic architecture not degree of cellular differentiation

The first thing we will focus in on is the non-melanoma skin cancers which are the most common. Basal cell carcinoma is the most common. It comes from the basal layer of the epidermis and from hair follicles. About 85% of them are on the head and neck but certainly not all of them. You can get them on the trunk and extremities, especially the legs and distal arms. They have just about a nonexistent metastatic rate. However, they can cause quite extensive local destruction and that is the reason for removing them. Sometimes it is hard to justify to a patient doing surgery on their face on a relatively small lesion that maybe wasn't even noticed by the person but if left alone it is unpredictable how long it will take but really it can cause a lot of destruction.

There are four main types of basal cell carcinoma. Essentially, it is not by degree of cellular differentiation. It is more by the architecture of the lesion. The epidermis is where nodules of a nodular basal cell carcinoma form. A superficial basal cell carcinoma hugs the lower part of the epidermis. A more aggressive basal cell carcinoma, once again, not so much on a cytology but on the architecture is small wisps of islands down here lower in the dermis that really have quite a capacity to dissect through the dermis and cause a lot of destruction. These are sometimes even hard to see because as you can see the epidermis is relatively normal above these nests of tumor cells.

Nodular Basal Cell Carcinoma

- Most common variant
- Pearly/waxy papule, nodule, or plaque
- Superficial telangiectasia
- Frequent superficial ulceration

Basal cell carcinoma. You have a pinkish, fleshtone nodule. It doesn't measure much more than 6 - 8 mm. It has a little bit of central crust and the term we like to use for the texture is kind of a pearly texture. It kind of looks a little bit mushy. It is very friable. It sometimes has some surface telangiectasia. Usually, the patient will say, "every time I wash my face it tends to bleed. It never heals over."

A basal cell carcinoma has some surface telangiectasias. It has a little bit of a pearly quality or consistency to it. It doesn't have much erythema at all. It is pretty much flesh toned. Dermal nevi or benign moles of the face can look very similar, I will ask them, "How long have you had this? Does it ever bleed? Does it seem to be growing?" Certainly somebody that has a dermal nevus on the side of the nose for 20 years, my index of suspicion of a basal cell carcinoma might be a little bit lower.

Morpheaform Basal Cell Carci- noma

- "Scar-like" plaque (whitish dermal plaque with atrophy)
- More extensive subclinical spread, approximately 7mm from clinical margin

Basal cell carcinoma. could look like just an excoriation but if you look at the edges, you see that pinkish, pearly wart that is raised. It is very friable. Sometimes you see these behind the ears. Typically, they just think that they somehow traumatized their skin, which might in fact be true, but the reason why it became traumatized so easily is because it was a basal cell carcinoma. These are usually relatively asymptomatic. They aren't necessarily tender. They don't itch. Really, the main symptom tends to be that they bleed or sometimes are itchy so the fact that they are asymptomatic shouldn't dissuade you away from the diagnosis of a skin cancer.

Superficial Basal Cell Carcinoma

- Red scaly plaque, mimics superficial dermatitis
- Most common on the trunk and extremities
- Seen with chronic arsenic and areas of radiation damage

Dermal nevi. They tend to have a little bit more of a tannish hue to them. Very, very common on the face. Sometimes they have no pigment at all. Actually, probably more commonly, they don't have any pigment. They don't have that glistening quality. They don't have surface telangiectasias and they are not friable at all. Another thing is just touch them. They will feel very hard and firm and fibrous whereas a basal cell carcinoma is mushy and spongy.

Fibrous papule of the nose often mimics a basal cell carcinoma. Very, very common. Sometimes they are not this red but, once again, it is firm, it has been there a long period of time. It never bleeds. If there is any question, I would certainly do a little skin biopsy of it but fibrous papules of the nose is another very, very common facial lesion.

Lesions are very, very common especially on men with sebaceous skin or oily skin. I don't know if you can appreciate these flesh-toned papules with a little bit of a central dell. If they are in a cluster like this, it is a little bit more easy to justify that they are a benign lesion. It would be unusual to get a shower of basal cell carcinomas like this but they sometimes have sort of a yellowish hue to them that makes them a little bit easier to pick up as a benign sebaceous hyperplasia which is essentially just an overgrowth of the oil glands of the skin. Very, very common but once again very difficult to tell from a basal cell carcinoma at times.

So, nodular basal carcinomas can get big and if left alone they can spread quite extensively. As you can see here, she has involvement of pretty much her whole nose and part of her medial cheek. I show you these pictures to really justify why they need to be picked up early because they do just continue to grow.

Superficial basal cell carcinoma. Hard to pick up. They could look like a little patch of eczema, a little erosion. These are mostly seen on the trunk and extremities and even to a trained eye, it is really hard to tell this from a superficial dermatitis. Sometimes I will even give them a low potency cortisone to see if it clears it up especially if there is a background of a lot of other dermatitis. But certainly a solitary plaque that is here alone, it has been fixed for a long period of time, it hasn't just shown up, should raise your suspicion of a superficial basal cell carcinoma. Sometimes it gets crusty, very friable, more friable than you would expect a dermatitis to be but it doesn't really have that classic pearly border like a nodular basal cell carcinoma would.

Morpheaform basal cell carcinoma. It maybe looks like a little scar and that is really how it typically presents as a white, porcelain, fibrotic papule or small plaque. When I see this on a patient, obviously he has a background of a lot of photo-damage, a lot of telangiectasias and maybe small actinic keratoses. I will say, "How did you get this scar?" If there is no justification as to where that came from, it deserves a skin biopsy because that is exactly what morpheaform basal cells look like and of course they are the more aggressive and unfortunately the hardest to detect. Studies have shown that on the average, a morpheaform basal cell carcinoma has about 7.5 mm of subclinical spread. Morpheaform basal cell carcinomas are quite locally destructive to the surrounding skin.

Pigmented Basal Cell Carcinoma

- Dark brown/blue pearly papule
- Mimics dysplastic nevus or nodular melanoma
- Seen with darker skin types

Pigmented basal cell carcinomas. As is with most lesions, you have exceptions to the rules. Most basal cells don't make pigment but there are a rare few that do. First thing when I make my differential for this would certainly have been melanoma - a small nodular melanoma. There are some clues that can help you detect that it is a basal cell carcinoma not a melanoma. It, once again, has that pearly, glistening quality to it but obviously it deserves a skin biopsy. These are not any more aggressive because they have pigment in them than regular basal cell carcinomas.

Basal Cell Carcinoma Demographics

Sclerosing or morpheaform basal cell carcinomas have a very destructive nature. After histologic removal of this, you can see that he lost most of his chin so they really dissect a lot further than you can see to the eye. You could feel that the whole area is firm and it is infiltrated with a tumor. It really does stay quite locally destructive, not spread systemically.

- 95% Caucasians
 - most commonly fair skinned (Scotch, Celtics, Scandinavian)
- 95% between ages 40-79 years old
- 85% head and neck
- Nose most common site, approximately 30% of all tumors
- Rarely life threatening
- Have capacity for extensive local tissue destruction that can cause significant functional cosmetic morbidity

Squamous Cell Carcinoma

- Malignant tumor of epithelial cell keratinocytes (skin and mucus membranes)
- Second most common skin cancer
- 20% of all cutaneous malignancies
- Approximately 200,000 diagnosed per year in US
- Approximately 2,100 deaths per year in US
- Most common starting 5th decade
- Risk for metastasis greater than for BCC

Squamous cell carcinoma which is the second most common skin cancer has a slightly higher tendency for metastases. Obviously, it is the ones that are more poorly differentiated histologically and the ones that are larger, particularly on the lymph nodes and ears - an area that you certainly want to make sure when you are doing your annual physical exam that you take a look at, take a look at the lymph nodes and make sure that there isn't any lesion there that could be missed. This is most common on the areas of intense sun exposure, once again. It tends to be more hyperkeratotic than a basal cell. Basal cell carcinomas don't make keratin. They are more poorly differentiated... excuse me. They are of a more primitive cell line than squamous cells. Squamous cells come from more highly differentiated epidermal cells. So, something that has a hard keratotic horn would be more likely to be a squamous cell than a basal cell carcinoma.

Squamous Cell Carcinoma Clinical

Features

- Most common on sun exposed areas
- Hyperkeratotic skin colored-red nodule or plaque
- Occasionally ulcerated
- Surrounding sun damaged skin
- Occasionally displays explosive growth pattern

What are precursors to squamous cell carcinoma? The actinic keratoses are very common in fair-skinned patients, and they have a less than 1% chance of turning into a squamous cell carcinoma but that is what they would turn into. Not basal cell carcinomas. Actinic keratoses are not precursors to basal cell. Superficial or squamous cell carcinoma in situ, once again, precursor of a more aggressive squamous cell carcinoma. Somebody with extensive photo-damage. A lot of small lentigines and freckles. Here you can see some actinic keratoses on the hand.

Treatment is by a benign destructive means, whether it be liquid nitrogen or topical Efudex. First of all because they can be irritating in that they bleed and they often catch on clothing and then secondly, there is a small chance it can lead to a squamous cell carcinoma. What this tells you mostly is that this patient is at risk of getting a squamous cell carcinoma because they have a bunch of actinic keratoses. You've all seen these people with just showers of actinic keratoses on their scalp.

Squamous Cell Carcinoma Histology

- Graded on degree of cellular differentiation
- Less differentiated tumors show more aggressive growth pattern and have greater chance of metastasis
- Painful tumors may have perineural invasion and greater chance of recurrence
- Metastatic rate is less than 1-2% for small lesions
- Metastatic rate is up to 20% for tumors >4cm on the lips and ears

How do you tell an actinic keratosis from a squamous cell? Well, some clues are actinic keratoses tend to stay relatively flat. They might be quite scaly but the substance of the lesion is not there. It doesn't have a sort of firm or juicy basis. A more developed squamous cell carcinoma they just kind of flake. The flake falls off. Then they heal over. They occasionally bleed.

Squamous cell carcinoma in situ. It could look like just a little erosion here on the temple. Here is a squamous cell carcinoma in situ on the finger. It has a lot of keratin but not a lot of substance to the lesion. You can get these on the mucosal surfaces. Any lesion on the penis that tends to be fixed or it hasn't responded as if it was a dermatitis could be a superficial squamous cell carcinoma.

Squamous cell carcinomas have similar inducing factors as basal cell carcinoma. A couple of things that stand out, though. One, of course, is the human papilloma virus association with squamous cell carcinoma. Areas of radiation treatment are at increased risk, more so of squamous cell carcinoma than basal cell. People that used to get arsenic medicinally are showered with usually squamous cell carcinomas. I am sure you have all seen that transplant patients really get a showering of squamous cell carcinomas. Once again, more squamous cell carcinomas than basal cell carcinomas. An area of chronic scars, maybe a healed stasis ulcer on the leg or an old burn scar, is very vulnerable, once again, for a squamous cell carcinoma. It seems that the squamous cell carcinomas have a little bit more of an immunological component than the basal cell carcinomas so areas that are relatively immunocompromised like scars or immunocompromised patients or areas of chronic radiation damage are at increased risk actually for the more aggressive forms of squamous cell carcinoma.

Squamous Cell Carcinoma Precursor Lesions

- Actinic Keratosis

 - < 1% transform into invasive SCC

- Squamous cell carcinoma in situ

 - Bowen's disease

 - Bowenoid papulosis (associated with Human Papilloma Virus infection)

 - Erythroplasia of Queyrat (penis)

Where does it come from? Once again, from the spinous layer of the epidermis. This is a little bit hard to make out but what happens is here are these epidermal cells that have large nuclei and a high mitotic rate and it is really engulfing most of the dermis. Here is a relatively typical squamous cell carcinoma. Background of a lot of photo-damage. A keratotic papule with a quite edematous, juicy base more so than a flat actinic keratosis. Often, squamous cell carcinomas are tender. If somebody has a lesion that looks fairly benign but is quite symptomatic, I would be a little bit more suspicious of a squamous cell carcinoma. A squamous cell carcinoma on the lip could easily be mistaken for a herpes simplex lesion.

Squamous Cell Carcinoma

Pathogenesis

- Ultraviolet Radiation
- Chronic arsenic exposure
- Radiation treatment
- Human papilloma virus
- Immunosuppression
 - transplant patients
 - underlying cancer
- Chronic scars: burns, chronic ulcers, chronic osteomyelitis

These can be quite aggressive. They can be subtle. Here it is kind of tucked underneath a mustache. Remember, any area of the skin's surface can get a skin cancer. Obviously, it is more common on photo-exposed areas. Often, patients are going to point out bothersome areas to you but you know there are many patients out there that will just ignore things that aren't noticed by somebody. Squamous cell carcinoma of the ear. Keratotic base. Crusted center. Once again, he has a solar lentigo here. Usually, it really keeps the company of a lot of photo-damage.

A seborrheic keratosis doesn't have a lot of keratotic scale. It has that sort of warty look to it. It doesn't have an erythematous base which is probably the main reason I would pass this over as not a squamous cell carcinoma. Really a benign base doesn't keep the company of a lot of solar damage but at times it is very hard to tell.

Melanoma

- Arise from epidermal melanocytes
- Skin is most common site
 - also seen in mucosa, retina, and leptomeninges
- 7th most common cancer in Caucasians in the US

Melanoma is the one that you really don't want to miss as you know. It arises from the epidermal melanocytes. It doesn't only come on the skin. It can come on any mucosal surface whether it is in the mouth, the genitalia, the conjunctiva of the eyelids. It can show up in the retina. That is why, of course, it would be difficult to pick up in internist's office but people need to be reminded to get frequent ophthalmologic exams especially if they are at high risk and then, of course, the leptomeninges.

The incidence has really soared over the last several decades. I think it is at least due in part to early detection but in part also to true increased incidence due to environmental factors. Survival rates have improved because of early detection so case to case survival is better. However, overall mortality due to the increased incidence has increased.

Melanoma Epidemiology

- Incidence tripled in last 4 decades
 - early detection may contribute
- All ages affected
 - median age 53
- Case survival rates have improved
 - current overall 5-yr survival rate 83%
 - 1950 overall 5- year survival rate 49%
- Overall mortality rate, however, has increased almost 150% over last 40 years

People with so-called atypical nevi are at increased risk of melanoma. But even people that have a lot of benign appearing nevi, if they, say, have over 50 nevi, they are in fact at increased chance of getting melanoma. Of course, people with a family or personal history of melanoma need to be followed very closely absolutely once per year, head to toe skin check. Immunosuppressed patients as well as... it seems that with melanoma, the intermittent intense sunburns are more likely to cause a melanoma. Say, the upper socioeconomic class people that go down to the Caribbean once or twice per year and really fry their skin, they are at increased incidence of melanoma. Kids with a couple of bad, blistering sunburns when they are children as opposed to, say, carpenters that are out working all the time, they are at more of an increased incidence of non-melanoma skin cancers than melanoma skin cancers.

Atypical nevi. It has some smudging of the color at the border. A little bit larger than 6 mm which is the size of the head of an eraser. A little smaller than the head of an eraser, we tend to put in a more benign category. A helpful clue is if all of the nevi look relatively the same, you can assume that probably they are all going to be the same histology. So, if the patient maybe had one removed and the histology just shows a mildly atypical nevus and all the rest of their moles look pretty much the same, you can rest assured that probably they are all the same histologically. If one stands out in a crowd, that is certainly the one that needs to be followed, needs to be documented and probably should just be removed.

Atypical nevi. A little bit lighter in the center. A little bit more raised here. Kind of a jagged border. If this was the only one on this person, I would say it probably should come off. If they have dozens of these, it is a little bit more difficult and once again, you want to take the one off that stands out in the crowd. Halo nevi. Halo nevi by themselves are benign entities. It is just an immunologic response to the nevus cells and usually it means that the mole is going to leave - it is going to disappear. If the center of the halo nevus looks clinically atypical, then it should be removed. So, not so much the halo per se but once again still the nevus in the center. As you can see, these are pretty benign looking. Relatively large, but nice homogenous color pattern and nice even borders.

Classic signs of melanomas. It is subdivided into five different categories which really doesn't matter. The most important thing about melanoma is its millimeter depth in the skin as far as prognosis. These are really some classification systems that are helpful histologically and helpful because it helps indicate a location but really, once again, when you have a patient with melanoma, the most important thing is knowing its millimeter depth and we will talk a little bit more about that. As you can see, it is proliferation of these lower pigmented cells in the epidermis that are pushed out into the dermis and are making a lot of pigment.

Melanoma in situ. It is relatively large and it seems to be splaying out probably about 1 or 2 cm. The color isn't too worrisome. It is a bit fragmented towards the bottom. A little bit of an irregular border but the thing that really sticks out in my mind of this one is its relatively large size. Quite a variation in color. As you can see, it is large and has jagged borders. I think that would be a relatively easy one to pick

Melanoma Risk Factors

- Numerous nevi (common or atypical)
- Atypical nevi
- Family or personal history of melanoma
- Immunosuppression
- Intermittent intense sun exposure

up.

Melanoma can be 1 mm or this could be 6 mm. If there is regression of pigment, there is an erythema, overall almost a grayish veil over it, very jagged border. The color, if I can emphasize one thing it is to look at the color of the lesion because probably that is a prognostic factor that is going to help you the most as far as determining which one is going to be a melanoma. Look at this angry, angry black color. Even if this was 4 mm, this deserves to come off. A little bit of a red hue around the edges. A very jagged border. Once again, almost a grayish veil over it.

A relatively large area of regression which actually is a more ominous sign but this is a relatively superficial melanoma. Once again, some regression. This grayish veil over the edge. Very dark, angry black color at the bottom. Here, once again, this is a nodular melanoma. What it just means is that it is more raised. What it tends to mean histologically as well though is the more raised up a melanoma is, the deeper it is going into the skin and once again, the worse prognosis it is going to have.

This one is significantly different from the other one. They are really not that big but are really a dark, angry black color. A lot of people make black moles, especially Asians, people with darker skin types but if they have a shower of dark moles over their skin, I probably would feel comfortable biopsying maybe one or two of them. It doesn't necessarily alone mean that it is bad but in the keeping in the company was that she was relatively fair-skinned. Actually she had blond hair and had this dark angry mole on her leg. Don't forget to look at the hands and feet, especially the feet. It is hard to get patients to take off their socks especially if they have stockings on or if they are elderly and it is difficult for them to remove it, but here we have a melanoma hiding between the toes.

Black nails. A lot of people get black streaks in their nails. Whether it be from a benign pigmented lesion or whether it be from trauma. If somebody has a traumatically black nail, you want to make sure it is growing out. If it has been there for a significant amount of time and hasn't started to grow out, you need to be suspicious. A sign called Hutchinson's sign - it doesn't really matter the name of it - but a splaying out of pigment onto either the proximal nail fold or onto the actual finger itself is a much more ominous sign and pretty much diagnostic of a melanoma. So, if you see any pigmented streaks on nails, you want to if you think it is a subungual hematoma it should be growing out but if you think it is a benign nevus, it should not have any pigment anywhere except for the nail.

Melanoma Clinical Presentation

- Melanoma in situ
 - macular, atypical pigmented lesion
 - variegated color
 - malignant cells confined to the epidermis
- Superficial spreading melanoma
 - macular or slightly raised
 - commonly >2.5cm
 - grows radially
 - marked by variability in color
- Nodular melanoma
 - papule or nodule
 - grown vertically
 - intense dark color
 - can rarely be amelanotic or pink
 - most common: trunk-men, legs-women
- Acral lentiginous melanoma
 - palms, soles, nail beds
 - equal distribution in all races
 - more common >65 years old
- Lentigo maligna melanoma
 - ill defined atypically pigmented patch
 - areas of intense sun exposure such as face
 - >50 years old

Actinically induced melanoma can very easily be confused with a seborrheic keratosis. This is macular. It doesn't have any substance as a seborrheic keratosis would have. Once again, it has a real variegated color. Once again, here it could look like just some solar induced freckling but really a bit darker than a benign lentigo or a freckle would be. Don't forget the eyes. You can get melanoma in the eyes. Obviously, this one is very obvious with this severe injection but any pigment spot in the eye should certainly get evaluated by an ophthalmologist. Seborrheic keratosis. We all see these. At times, this one is very easy to tell from a pigmented lesion. It has this real warty look. Sort of snow cyst. It is a waxy consistency and sometimes even flakes off when you touch them.

Melanoma Staging and Prognosis

The millimeter depth is the most important prognostic factor. There are certainly other prognostic indicators as far as site, age, sex that can lead you to a slightly better or worse prognosis but the only thing you want to know from your pathologist is how deep it is. As you can see, a melanoma caught early - melanoma in situ - which is confined to the epidermis, is essentially a 100% cure. Down only 4 mm in the skin, where certainly it doesn't seem very deep, has a much, much worse prognosis so the name of the game with melanoma is early recognition.

Stage	Criteria	5-year survival
in situ	confined to epidermis	100%
IA	localized melanoma, <0.75mm	96%
IB	localized melanoma, 0.76-1.5mm	87%
IIA	localized melanoma, 1.5-4mm	65-75%
IIB	localized melanoma, >4mm	47%
III	limited nodal mets or, 5 in-transit mets	36%
IV	distant or advanced regional mets	5%

- Vertical tumor thickness is best prognostic indicator for melanoma confined to the skin

- Other prognostic indicators

- site

- hands and feet have poorer prognosis

- age/sex

- older patients and males have poorer prognosis

- mitotic index

- others

Diagnosis of Skin Cancer Non-melanoma Skin Cancer

How do you diagnose skin cancer? Diagnosing non-melanoma skin cancer - basal cells and squamous cells - is relatively easy and it is something that I think a lot of internists and primary care physicians are doing in their office now. Numbing up the area with a little bit of local and just doing a little shave biopsy off the top is a very easy way to diagnose non-melanoma skin cancer. You only need a representative sample.

- Biopsy
 - shave or punch
- Need only enough tissue to get representative sample

Melanoma

Melanoma, however, needs to come completely off. You have no idea from a biopsy how deep the entire lesion is. The surgical treatment as well as any adjuvant treatment depends upon its millimeter depth. So, if you see a melanoma, it doesn't get biopsied. Either you or somebody needs to just plain take the whole thing off telling the patient that this is for the diagnosis and the definitive surgery will be after you figure out how deep it is.

- Excisional biopsy

- removing entire lesion (or large portion) with narrow margin

- essential to have enough sample to know the maximal tumor thickness for definitive treatment and staging

- small sample might not be in the area of maximal tumor thickness

- Physical exam including lymph nodes

Treatment of Skin Cancer Non-melanoma Skin Cancer

- Excision with 4-5mm margins ("gold standard")
 - cure rate 90-95%
- Cryosurgery
 - application of liquid nitrogen according to a protocol determined by placement of thermocouples within the skin
 - freeze the area for 1 ½ minutes and thaw for 3 minutes
 - produces cure rates comparable to excision if done correctly
 - side effects
 - tender blister, erosion, 4-6 weeks for healing
- Electrodesiccation and curettage
 - combination of mechanical curettage and electrodesiccation, repeated 3 times
 - technique dependent, if done correctly comparable cure rates to excision
 - takes 4-6 weeks to heal Mohs Micrographic Surgery
 - specialized technique for removing high risk NMSC
 - tissue is excised in a fashion such that 100% of the tumor margin can be examined microscopically by frozen section. The tumor is removed in layers until there is no histologic evidence of residual tumor.
 - tissue sparing
 - higher cure rates
 - tumors that should be excised by Mohs surgery: larger than 2cm lesions on the nose, ears, eyelids, lips, genitalia recurrent lesions aggressive histology, perineural invasion areas where there is a need for tissue sparing indistinct clinical margins

We will go into a little bit of treatment of skin cancer. Essentially for non-melanoma skin cancers and atypical nevi, they just need to be cut out, usually with a 4 or 5 mm border. There are others for more superficial non-melanoma skin cancers. There is a procedure called curettage. I tend to reserve this for lesions on the trunk and extremities because it leaves kind of a porcelain white coin-shaped scar as opposed to a fine line excision which would look better on the face. Essentially, you curette it and electrodesiccate the base and it is relatively easy and simple. It takes about ten minutes and you repeat that three times. The theory behind it is you kind of scoop it out, you cauterize it, you scoop it out again, usually using a bigger curette to start and a smaller curette for the base. It has a very high cure rate. Usually around 93 - 95% cure rate if done in good hands.

Cryosurgery is also a reasonable option with a non-melanoma skin cancer. I personally don't like it very much. It is hard to get a good feel of whether you have actually removed the tumor. It leaves a big blister that is very difficult for the patient to take care of and pigmented cells are much more thermo-sensitive so you will end up with a very pronounced white spot, I am sure you have probably seen it, which is cosmetically a little bit disfiguring. Mohs micrographic surgery is what I do. It is a way of histologically mapping the tumor under local such that you remove the entire tumor for these more aggressive sclerosing basal cells or squamous cell carcinomas without removing too much skin.

Melanoma

Treatment of melanoma is essentially surgical. The gold standard is usually a 1 to 2 cm clinical margin around the lesion. There have been many studies to show that the prognosis is just as good with about a 1 to 2 cm margin. Sentinel node mapping and adjuvant therapy for more aggressive melanomas is certainly something as well as interferon, which I think you have heard a lot of about, have increased survival for the more aggressive melanomas.

- Excision

- margin: based on thickness of tumor

- in situ: 5mm margin

- <1mm: 1cm margin

- 1-2mm: 2cm margin

- >2mm: 3cm margin

- depth: muscular fascia (except in-situ lesions)

- Additional treatments

- for tumors 1-4cm without palpable lymph nodes, sentinel node mapping and excision is advocated. If sentinel node is positive the entire basin is removed, if negative the basin is not excised.

- for tumors < 1 mm or >4 mm there is no added benefit for sentinel node mapping or elective lymph node dissection

- Adjuvant therapy for Stage IIB and III

- recombinant interferon alpha 2b has shown in clinical studies to improve 5-year survival by approximately 10%

- Stage IV

- treatment predominately palliative

- most commonly used single agent: dacarbazine

- also used: cisplatin, nitrosoureas, XRT, immunotherapy

- no treatment modality improves survival greater than 25%

Skin Cancer Detection

- Examine skin annually, especially back
- Recognize high risk patients
 - history of blistering sunburns before age 15
 - long term sun exposure with physical evidence of sun damage -those with actinic keratosis, freckles, nevi, telangiectasia, premature wrinkling, dysplastic nevi
- History of prior NMSC
 - 50% chance will have 2nd NMSC with in 5 years
- Hereditary syndromes
- Immunosuppression, especially organ transplants
 - marked tendency for aggressive squamous cell carcinomas

Skin Cancer Prevention

- Patient education

- Protection from UVR

- hats

- sunscreens, at least SPF 15, applied several times daily with more prolonged exposure

- avoidance of tanning parlors

- Yearly skin checks

Skin Cancer caught early is 100% curable, caught late can be deadly. Since the skin it is the easiest organ to survey, all skin cancers should be caught and treated early. Public awareness is paramount.

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