

Sun Exposure and Skin Cancer

Skin cancer has reached epidemic proportions and its incidence continues to rise. Non melanoma skin cancer (NMSC) is by far the most common malignancy in the U.S., more frequent than all the other cancers combined. Over 1 million cases of basal cell carcinoma (BCC) and 250,000 cases of squamous cell carcinoma (SCC) are reported in the U.S. annually. Although malignant melanoma (MM) is less prevalent, over 108,000 cases were reported in the U.S. in 2007: 48,000 in situ melanomas and 60,000 invasive tumors. The incidence of melanoma is rising faster than any other cancer.

Non Melanoma Skin Cancer (NMSC)

NMSC refers to BCC and SCC. In Caucasians the lifetime risk of developing a BCC is 30% and SCC : 10%. Fortunately, the mortality is low, 2,740 deaths were reported in the U.S. in 2007. The low mortality rate of NMSC is due to its relatively non aggressive behavior and early detection. Skin cancer is caused primarily by ultraviolet light: it has been estimated that chronic sun exposure accounts for 90% of NMSC. Other risk factors include fair skin, blue and light eyes, blond and red hair, freckles, immuno suppression (organ transplantation) and advancing age. NMSC is particularly common in the elderly and people with a prior history of skin cancer. Someone diagnosed with a NMSC has a 50% chance of developing another one within 5 years.

Malignant Melanoma

The lifetime risk of developing a melanoma is 3% in Caucasians and continues to rise annually. Unfortunately the death rate is also rapidly increasing. There were 8,110 reported melanoma deaths in the U.S. last year. Unlike NMSC which is most common in the

elderly, melanoma is also very common in young adults: one third of melanomas occur before the age of 45.

The rising incidence of MM is in large part due to sun exposure, particularly intermittent intense sun exposure early in life. Sunburns before the age of 21, outdoor summer jobs as a teen and the use of tanning beds before age 35 are well recognized risk factors. Just one blistering sunburn in childhood doubles the risk of melanoma later in life. Other important risk factors include a fair complexion, freckles and multiple moles: especially atypical moles (Dysplastic Nevi) in the setting of a personal or family history of melanoma.

Prevention

Skin cancer is a serious health problem in terms of mortality, morbidity and cost. Yet it is a preventable disease.

The recommendations are simple:

- Wear a broad brim hat.

- Keep your shirt on.

- Stay in the shade.

- Apply sunscreen.

Although most people are familiar with these guidelines, only one third of adults and even fewer teenagers actually practice sun protective behavior regularly. Clearly, more efforts are needed in that area. Primary prevention emphasizing public education, sun safety, behavior modification and life style changes, is the key to curbing the skin cancer epidemic.

Sunscreens

Ultra violet radiation is made up of UVA and UVB rays. UVA ages the skin (wrinkles) and UVB burns it (sunburn). Both can cause skin cancer. Therefore broad spectrum sunscreens (blocking both UVA and UVB) are recommended. An SPF (sunburn

protection factor: a measure of the protection against UVB) of 15 to 30 is sufficient for most people. The FDA is expected to release a UVA protection scale for sunscreens (0 to 4 stars) later this year. It is important to note that sunscreens need to be reapplied every two to three hours, since their effectiveness decreases rapidly after application. The use of sunscreens is controversial however, since their effectiveness in the prevention of skin cancer in humans has never been demonstrated conclusively. The proponents of sunscreen use have recently received strong support from an Australian study showing that the use of sunscreens decreased the incidence of SCC by 38% and BCC by 25%. The effectiveness of sunscreens in preventing MM has not been confirmed and therefore shade, hat and clothing should be emphasized to high risk patients.

Detection

Since there is no effective care for advanced melanoma, early detection remains the best method to save lives. The cure rate for an early melanoma (depth < 1 mm) is 92 to 98 % whereas disseminated disease is almost uniformly fatal.

Eighty percent of MM are detected by the patient or the spouse, therefore frequent, routine self examinations are very important. Since change is often the first sign of cancer, any mole, growth or spot changing in color, size or shape should be brought to the attention of a physician. Another useful sign is the “ugly duckling sign” where a particular mole looks different from all the others. A useful tool is the ABCDE of melanoma:

- A. Asymmetry- Most melanomas are asymmetrical; a line through the middle would not create matching halves.
- B. Border irregularity-The borders of a melanoma are uneven. The edges may be scalloped or notched.

C. Color variability- Varied shades of brown, tan, black or even red, white or blue are often present.

D. Diameter- Melanomas are usually larger than a pencil eraser (about 6 mm), but that is not a strong clue, since smaller melanomas are not rare.

E. Evolution- Any change in color, size, shape, elevation, or another trait, or any new symptom such as bleeding, itching or crusting, points to danger and should be evaluated by a doctor.

A BCC typically presents as a sore on the face or sun exposed area that does not heal over several months.

A SCC frequently presents as a wart like growth on the hands, scalp, ears or lower lip.

A complete skin exam by a qualified healthcare professional is an effective way to detect skin cancer. Dermatologists and some primary care physicians routinely perform these visual exams. This is also the time when precancerous growths (Actinic Keratoses) can be treated.

Treatment

The treatment of skin cancer is primarily surgery.

The cure rate for BCCs and SCCs is close to 100% when they are detected and treated early. However, the larger and deeper a neglected tumor grows, the more dangerous it becomes and the more disfiguring the treatment is likely to be.

MOHS Micrographic Surgery

Mohs surgery is a specialized, highly effective technique for the treatment of NMSC. When performing Mohs surgery, the

physician removes the tumor with a thin layer of tissue around it. The layer is then processed in the laboratory and checked by the physician under the microscope. If tumor is still present at the tissue margins, the procedure is repeated until the last layer viewed is cancer-free. This technique is the most effective for the treatment of BCC and SCC, with the highest reported cure rate and minimal loss of healthy tissue.

Excisional Surgery

Using a scalpel, the physician removes the entire growth along with a surrounding border of apparently normal skin as a safety margin. The skin around the surgical site is closed with stitches and the growth sent to the laboratory to verify that all cancerous cells have been removed. When melanoma is detected early, a standard excision with a wide margin of healthy tissue is the sole treatment required.

Curettage and Electrodesiccation

The growth is scraped off with a curette, and the base cauterized with an electric needle. This procedure is effective for small superficial tumors.

Non surgical treatment, with Imiquimod or 5FU creams, can be effective for selected superficial NMSC.

Conclusion

Avoiding sun exposure is the single most important factor in the prevention of skin cancer. Public education emphasizing sun avoidance and regular skin examinations is the cornerstone of prevention and early detection of skin cancer.

For more information go to: www.skincancer.org.

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