Ultraviolet radiation reports shine light on how pediatricians can help patients avoid skin cancer

by Sophie J. Balk, M.D., FAAP

Now more than ever, pediatricians are encouraging children to engage in outdoor physical activity. Being outside without adequate sun protection, however, often leads to sunburn and increases the risk of developing skin cancer.

In the March issue of Pediatrics, an AAP technical report (2011;27:e785-e811) and policy statement (2011;127:588-597) update information about the hazards of solar ultraviolet radiation (UVR) and highlight the dangers of tanning salons.

Skin cancer rates rising

It is well-known that sun exposure raises the risk of developing skin cancer, the most common cancer in the United States. Basal cell carcinoma (BCC) and squamous cell carcinoma (SCC) occur most frequently — more than 1 million cases are diagnosed yearly. Most develop in older adults, but the incidence is rising in younger people. These cancers are highly curable if found early and removed; nonetheless, about 2,000 people die of these tumors each year, according to the American Cancer Society (ACS).

Melanoma, the third most common skin cancer, occurs mostly in older adults but also is a common cancer in young adults. New diagnoses of melanoma are increasing rapidly, and many skin cancer experts say that melanoma incidence has reached epidemic proportions. The lifetime risk of developing melanoma is about 2% (1 in 50) for white people, 0.5% (1 in 200) for Hispanics and 0.1% (1 in 1,000) for blacks. People at highest risk have light skin and eyes and sunburn easily.

Melanoma accounts for only 5% of skin cancer cases but causes more than three-quarters of skin cancer deaths. Although nearly always curable if detected early, metastatic melanoma has a grave prognosis. ACS estimated that there were 68,130 new cases and about 8,700 people died of melanoma in 2010.

What increases risk?

Young people who experience one or more severe, blistering sunburns have a higher risk of developing melanoma later on. Intense intermittent sun exposure also raises the risk of developing BCC. In contrast, developing SCC is related to experiencing lower levels of UVR exposure over longer time periods.

Each day, more than 1 million people visit one of 50,000 U.S. tanning salons. Teen girls are frequent visitors. Powerful tanning lamps emit high levels of UVR, primarily ultraviolet A (UVA) radiation, but also some ultraviolet B (UVB). According to recent evidence, a tanning response means that DNA damage has occurred in skin. The International Agency for Research on Cancer concluded that UVR from artificial sources is a human carcinogen.

Many experts believe that dramatic increases in skin cancer, including in young people, may be due in part to increasing use of tanning salons. There is no evidence to suggest a protective effect of salon tanning (the “pre-vacation tan”) against the damaging effects of subsequent sun exposure.

How to advise patients

Many cases of skin cancer can be prevented by limiting exposure to UVR. A program of sun protection is recommended. Children and families should avoid sunburning and sun tanning, wear protective clothing and hats with brims, and apply sunscreen. When feasible, plan outdoor activities to limit exposure to peak-intensity midday sun (10 a.m.-4 p.m.). Sunglasses should be worn when in the sun. Protection comes from a chemical coating applied to the glass; lens color has nothing to do with UV protection. Parents and teens should look for a label stating that sunglasses block at least 98% of UVA and UVB rays.

Correctly using sunscreen can prevent sunburn and is believed to protect against SCC. Using sunscreen has not, however, been shown to prevent melanoma or BCC.

In addition, concerns have been raised about systemic absorption of sunscreen. Oxybenzone, a

RESOURCES

For more information on sun protection, consult the AAP guide, Pediatric Environmental Health, or visit the Centers for Disease Control and Prevention Web site at www.cdc.gov/cancer/skin and the Environmental Protection Agency’s SunWise Program at www.epa.gov/sunwise/index.html.
common sunscreen ingredient, was found in 97% of 2,500 urine samples analyzed as part of the Centers for Disease Control and Prevention’s National Health and Nutrition Examination Survey conducted in 2003-'04. Results from studies in animals exposed to certain sunscreen ingredients have shown alterations in reproductive and other organs. Sunscreen ingredients have been detected in breast milk.

Although toxicity in infants or young children resulting from sunscreen absorption has not been reported, skin permeability to topically applied products is of concern in the very young, especially in preterm infants. Absorptive and other properties of children’s skin may differ from those of adult skin until children are at least 2 years old.

Despite these new concerns, using sunscreen is recommended as part of overall sun protection by the Academy and many other organizations. Overexposure to the sun definitely raises skin cancer risk, and there is no benefit to sunburning or to skin aging.

Sunscreen with a sun protection factor (SPF) of 15 or higher should be used when a person might sunburn. It should be allowed to dry before a person goes outdoors. To be most effective, use sufficient quantities of sunscreen (about 1 ounce per application for an adult); apply it every two hours; and reapply the product frequently after swimming, exercising, sweating or towel drying. Select a “broad-spectrum” sunscreen that protects against both UVA and UVB.

Skin cancer prevention is a lifelong effort. Although time is at a premium for most pediatricians, an important aim is to incorporate advice into at least one health maintenance visit per year, beginning in infancy. Not all children sunburn, but all are at risk of adverse effects of UVR exposure on the eyes and immune system. Teachable moments may be found during visits for sunburns or when a teenager is noted to have a tan.

Dr. Balk is lead author of the technical report and policy statement. She is a past chair of the now AAP Council on Environmental Health and associate editor of Pediatric Environmental Health.
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