

Pediatric Melanoma: New Thoughts on Incidence and Patient Characteristics

Pediatric melanoma remains rare, though the incidence continues to climb. Researchers offer fresh analysis of this troubling presentation.

By Jonathan Wolfe, MD

Although melanoma in individuals under age 20 remains relatively rare, its incidence over the past 30 years has increased. Of note, research suggests that melanoma in children and teens differs from that of individuals age 20-24.¹ Data show that when it comes to localized invasive melanoma in patients under age 19, survival may not be related to tumor thickness.

Growing Incidence

According to statistics from The National Cancer Institute's Surveillance Epidemiology and End Results (SEER) data collection, the incidence of melanoma in individuals under age 19 remains low. From 1973 to 2000, average incidence per million individuals was 0.7 for those under age five, 0.9 for those age five to nine, 2.8 for those age 10 to 14, and 14 for those age 15 to 19. It's well known that the incidence of melanoma increases with age, and the trend picks up notably during the 20s. Average incidence per million was 38.9 for those age 20 to 24 and 69.4 for those age 25 to 29.²

For all individuals under age 20 the average incidence of melanoma increased 2.9 percent per year from 1973 to 2001. The overall incidence of melanoma increases about 46 percent per year of age until age 20.³ While melanoma accounts for just one percent of all cancers seen in patients under age 15, it

accounts for 7.1 percent of cancers diagnosed in individuals age 15 to 19.²

Even though the overall incidence of malignant melanoma is higher in men than in women, data have suggested that women have a higher incidence of melanoma than men up to age 40. From age 40 to 70 the rate of increase of melanoma slows for women. From age 70 onward the rate of increase accelerates, though it is not as rapid as in the population under 40. For men, the most rapid increase in the rate of melanoma occurs from age 40 to 80, by age 70

men develop melanoma at twice the rate of females.²

Drawing Comparisons

Despite ample knowledge regarding the different characteristics of melanoma in the pediatric population compared to adults, there is less data regarding the differences between melanoma in those under age 20 compared to melanoma in younger adults, those age 20 to 24. To elucidate these differences, researchers analyzed National Cancer Center Data Base data on melanoma patients seen between 1985 and 2003.

New In Your Practice

Both Sides of the Pond. Melanoma isn't just a problem in the US. Yet another study has found that skin cancer rates are rising. The new study (released by Cancer Research UK) found that melanoma rose 43 percent during the past decade in the UK. Since the mid-1980s, rates have doubled in women and tripled in men. The incidence of melanoma has steadily increased in the United States, as well, and from 1995 to 2004, the rate of melanoma rose by more than one percent per year. The incidence was particularly noted among young adults and the elderly, according Martin A. Weinstock, MD, PhD, who shared recent data at the Academy '07 AAD conference in New York last month.

Drink to That! New research indicates that the combination of exercise and caffeine may increase protection from skin cancer (PNAS). According to researchers, this combination increased the body's natural destruction of pre-cancerous cells that had been damaged by UVB radiation. Four hairless groups of mice were studied, some were fed water containing caffeine, some had wheels on which they could run, some had both, and one group had neither. Compared with the control animals, those drinking caffeine had a 95 percent increase in apoptosis in damaged cells. The exercisers showed a 120 percent increase and the mice that were drinking and running showed nearly a 400 percent increase in apoptosis.

Included in the study were 3,158 melanoma patients aged one to 19 (median follow-up time was 59 months). Of these, the vast majority (96.3 percent) had cutaneous melanoma. The remainder had ocular melanoma (three percent) or an unknown primary tumor (0.7 percent). More than 75 percent of children up to age 19 had localized disease (13.4 percent with melanoma in situ and 62.3 percent with localized invasive melanoma).

Among all patients up to age 19, cutaneous melanoma was more common in girls (55.5 percent). The percentage of females with melanoma increased with each age group from one to four, five to nine, 10 to 14, and 15 to 19, but among those under five, most patients were male.¹

Overall, the percentage of patients with distant disease decreased with age. Until age 10, males were more likely to present with regional disease than localized disease; from age 20 to 24 males were more likely to present with distant disease than were females the same age. From ages one to 19 both sexes were equally likely to present with distant disease. The percentage of patients with localized invasive melanoma increased with age. Younger adults have a higher chance of being node positive compared with older adults.¹

Of the 3,158 melanoma patients under age 20, 90.5 percent were over age 10; most melanomas occurred in the 15-19 age group. When melanoma occurs in individuals under 10, the study suggests, affected patients are significantly more likely to be non-white and male. Such patients are more likely to present with primary tumors of the head and neck and to have regional or distant metastasis. Females of all ages, except one to four, were more likely to have lower extremity primary tumors than males. Children age one to four had higher incidences of primary tumors of the

head and neck followed by the lower trunk. With increasing age into young adulthood, the percentage of head and neck tumors decreased, while the rate of truncal tumors increased.¹

The greatest prognostic indicator of survival in individuals 19 or younger is initial summary stage. Overall five-year survival rate was 98.7 percent for those with melanoma in situ, 93.6 percent

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for localized invasive disease, 68 percent for regionally metastatic disease, and 11.8 percent for distant metastasis. Age younger than nine is associated with poorer five-year survival. Excluding those patients with melanoma in situ, five-year observed survival rates for all other melanomas were similar in the 10 to 14, 15 to 19, and 20 to 24 age groups.¹

Tumor thickness is a reliable prognostic indicator in those age 20 to 24,

but thickness alone did not predict survival in patients under age 19 with localized invasive melanoma.

Researchers defined tumors as either thin, measuring 1.5mm or less, or thick, measuring greater than 1.5mm. In fact, among patients under 19, those with thicker tumors actually had better survival compared to 20-24-year-olds with thicker tumors.¹

That survival in those under age 19 was not associated with thickness may suggest different biology and history in children with melanoma, since thickness is the primary prognostic factor in all ages groups greater than 20. Survival in children was related to extent of disease. Unfortunately, this study did not provide more data on histologic prognostic attributes; this certainly would be a fascinating extension of this work. One potential explanation may be that childhood melanoma are often associated with larger congenital melanocytic lesions, which have a bad prognosis prior to puberty.

Among patients age 10 to 24, female sex was associated with significantly better overall survival (but not in the age group one to nine). Among patients with localized invasive disease, females had better survival than males in the 20 to 24 age group but not in younger age groups.¹

For Future Study

Although the etiology of melanoma in children and adolescents remains uncertain, generally UV radiation is not considered to be as influential as it is in older patients with melanoma.² Findings from the current study support biological differences in melanoma in children. Additional data regarding the history of each patient may have been helpful to identify the role of family history of melanoma and/or individual history of pigmented lesions in each case. Furthermore, data regarding possible delayed diagnosis would have been illustrative, as


Practical Pearls In This Issue

Melanoma Statistics

Estimated number of individuals diagnosed in 2000²:

Under age 5	13
Age 5-9	19
Age 10-14	81
Age 15-19	314
Age 20-24	841
Age 25-29	1,431
As a proportion of all cancer, ² melanoma peaks at	Age 25
Increase in incidence of pediatric melanoma ³ per year of age	46%
Increase in incidence of pediatric melanoma ³ per year 1973 to 2001	9%
5-year melanoma specific survival ³ for children with melanoma	93.6%
5-year survival ² among melanoma patients age 15-29	95%+ for Women
.	88% for Men

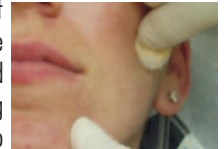
clinical and pathologic characteristics of melanoma in children make diagnosis difficult.¹ Diagnosis can be easily missed or delayed. The most common clinical presentation of melanoma in children is a change in a mole; some lesions have atypical appearance. Melanoma in children may be misclassified pathologically as benign or congenital.

Given that the incidence of melanoma in children and adolescents is climbing (albeit gradually), we must not overlook the importance of educating parents to examine children's skin and to monitor any lesions for suspicious changes. Educational efforts targeted toward the families of non-white children may be especially beneficial given that melanoma in a patient under age 10 is most likely to occur in a non-white individual. Furthermore, studies show that among adults, African-Americans diagnosed with melanoma tend to present with more advanced disease,⁴ presumably due to decreased suspicion for melanoma in patients with darker skin types and subsequently delayed diagnosis. Educating the families of non-white patients about melanoma risk could raise awareness about melanoma risks in this population generally and help to reverse this trend. 

- Lange JR, Palis BE, et al. Melanoma in children and teenagers: an analysis of patients from the National Cancer Data Base. *J Clin Oncol.* 2007 Apr 10;25(11):1363-8.
- Herzog C, Pappo A, Bondy M, et al. Malignant Melanoma. National Cancer Institute SEER AYA Monograph, Chapter 5, Malignant Melanoma. Accessed from seer.cancer.gov
- Strause JJ, Fears TR, Tucker MA, Wayne AS. Pediatric melanoma: risk factor and survival analysis of the surveillance, epidemiology and end results database. *J Clin Oncol.* 2005 Jul 20;23(21):4735-41.
- Byrd KM, Wilson DC, Hoyler SS, Peck GL. Advanced presentation of melanoma in African Americans. *J Am Acad Dermatol.* 2004 Jan;50(1):21-4.

Inform patients in the reception areas of any delays beyond 10 to 15 minutes. Let them know their place in the queue. As the length of delay superseded the 15 minute mark, the importance of being kept informed of a delay increased markedly from a mean of 1.45 to 2.36 on a categorical scale from 1 ("not important") to 3 ("very important"). p. 35

Apre-chemical peeling regimen consisting of tretinoin and hydroquinone is thought to increase the degree of penetration of the peeling agents and to promote re-epithelialization. Aside from treating dyschromia, hydroquinone has also been proposed to block the development of new pigment production in the epidermis during the healing phase. p. 41



Any cases of non-specific intertrigo warrant suspicion for Seborrheic dermatitis, says Boni Elewski, MD, reminding that seborrheic dermatitis may develop in any fat fold, as well as the armpit and groin. Properly diagnose scalp psoriasis or eczema that may be mistaken for SD. Consider underlying SD among patients with sudden unexplained hair loss. Patient scratching in response to SD-associated pruritus may lead to scalp trauma and subsequent hair loss. p. 52

Topical retinoids remain the gold standard for topical anti-aging, maintains Marianne N O'Donoghue, MD. In some cases, she says, initiation of retinoid therapy "brings out" seborrheic dermatitis on the face. To combat this, she recommends the use of an anti-seborrheic dermatitis shampoo to cleanse the face twice weekly at the initiation of therapy. p. 25



Your staff should be hired and retained because they are able to share in your basic vision, not simply because of their level of previous experience. Experience alone may allow a new staff member to "hit the ground running," but if they are not on board with your vision they will ultimately be more costly to you. This is especially the case if they possess a detrimental attitude and improper work habits. p. 23

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Prior to signing a contract with an IS provider, you are in the best negotiating position. Read the contract carefully. Most contracts will note that a salesperson's statements do not constitute warranties and shall not be relied upon. This means that all "understandings" need to be written into the contract before you sign it. p. 12

When patients mention how great their last dermatologist was, the current doctor might ask why they are no longer seeing that physician. Usually the patient will say, "Oh, well my insurance changed," to which the dermatologist may respond, "So I'm second best?" Most patients will then rush to their own defense, asserting that that is not what they meant. p. 28

