Melanocytic Nevi in Children

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Melanocytic Nevi

- Melanocytic Nevi
  - Congenital melanocytic nevi
  - Acquired melanocytic nevi
  - Dysplastic nevi
- Melanoma in Children
- Ultraviolet Radiation Safety
  - Indoor tanning
Melanocytic Nevi (Moles)

- Accurate diagnosis of congenital & acquired melanocytic nevi is important for appropriate management
- Prompt identification of suspicious lesions may lead to earlier diagnosis & treatment of melanoma
- Recognition of risk factors for melanoma can lead to the early institution of preventative measures

Congenital Melanocytic Nevi (CMN)

- Nevomelanocytic proliferations present at birth or in the first few months of life
- Categorized by widest diameter of expected projected adult size
  - Small <1.5 cm
  - Medium >1.5 cm <20 cm
  - Large >20 cm
  - Giant “garmet” distribution >40 cm
- New scheme includes additional descriptors
  - Location, color heterogeneity, texture, satellite nevi, hypertrichosis, & presence of nodules

Epidemiology

- Small congenital melanocytic nevi
  - Occur in approximately 1% of newborns
- Large/Giant congenital nevi
  - Rare condition
  - Affects approximately 1 in 20,000 to 1 in 500,000 newborns
**Congenital Melanocytic Nevi (CMN)**

- Light to dark brown oval to round patches or plaques
- Pigmentation may be uniform or irregular
- May develop dark course hair over time
- Large/giant CMN
  - More pigment and texture irregularities
  - May have associated satellite nevi

**Risk of Melanoma?**

- Lifetime risk of melanoma in small or medium size CMN is controversial
  - Risk does not seem to increase till after puberty
- Lifetime risk of melanoma in large or giant CMN reported between 2-10%
  - Risk greatest during the first 5-10 years of life
  - Higher risk for giant CMN >40 cm and if satellite nevi are present
- Large/giant CMN can also develop other malignant tumors or visceral melanomas
  - Rhabdomyosarcoma or liposarcoma

**Management of Small & Medium CMN**

- Daily photoprotection & monitoring of CMN for changes
  - Follow for changes in texture, color, shape, & size
- Can consider removal (excision) if:
  - Clinically atypical
  - In a cosmetically sensitive location or a difficult location to follow

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**Large & Giant CMN**
- Multidisciplinary individualized approach
  - Involving pediatrician, dermatologist, plastic surgeon
- Workup
  - Consider screening brain/spine MRI with contrast in high risk patients for neurocutaneous melanocytosis
    - Follow development, neurologic exam, and OFC
  - Consider biopsy of suspicious/atypical lesions
- Close clinical monitoring for changes in nevus over time
  - Photography
  - Follow for development of new nodules


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**Large and Giant CMN**
- Early staged prophylactic surgical excision
  - Requires tissue expansion and multiple procedures
- Nevus cells extend into deep tissue planes
  - Prophylactic excisions do not completely eradicate risk of melanoma
- Meta-analysis: 954 large CMN patients
  - Higher occurrence of cutaneous melanoma in those who did not have surgery (7.5%) vs. those who had surgery (0.6%)


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**Neurocutaneous Melanocytosis**
- Benign and/or malignant CNS melanocytic proliferation
  - Associated with large CMN or >3 small CMN
  - Increased risk if large/giant CMN on scalp or back
    - Multiple satellite nevi (higher risk if >20)
  - Present in up to 25% of giant nevi patients

Neurocutaneous Melanocytosis

- May be asymptomatic or can present with signs of increased intracranial pressure
  - If clinically evident, prognosis extremely poor
  - Less aggressive treatment in patients with neurocutaneous melanocytosis
- Diagnosed by MRI with contrast on T1 images


Psychosocial Effects

- CMN can have psychological ramifications depending on size & location of nevus
- 30% of patients with large CMN have behavioral & emotional problems
- Another study noted that patients with head & neck or small CMN considered surgical removal worthwhile
  - 11-14% of patients with large CMN >20 cm believed removal worsened their appearance
- Can consider excision for cosmetic reasons


Acquired Melanocytic Nevi (Moles)

- Tan, brown, or black macules or papules
- Round or oval, evenly pigmented with sharply defined borders
- Histology: bland appearing nevus cells
- Usually < 6 mm in diameter
- Majority are harmless
- Sun protection and sunscreen use may decrease nevus burden

Atypical or “Dysplastic Nevi”

- Often appear during adolescence
- More common in individuals with many nevi or family history of atypical nevi
- Usually larger with ill-defined borders & variable pigmentation—“ugly duckling”
- Histology: cellular & architectural atypia
- Individuals with atypical nevi may be at an increased risk of developing melanoma

Work Up of Melanocytic Lesions

- Consider referral if your patient has many “funny looking moles”
- Always consider referral for evaluation/biopsy of a clinically suspicious lesion
  - Rapid increase in size
  - Color change
  - Irregularity of pigment distribution
  - Symptomatic

Melanoma

- Least common type of skin cancer
  - Highest associated mortality
  - Usually seen in older adults, rare in children
- National Cancer Institute estimates 76,690 people will be diagnosed with melanoma in 2013
  - 9,480 estimated deaths per year
  - Lifetime risk approximately 1 in 50
  - Curable when detected & treated early


http://www.cancer.gov/cancertopics/types/melanoma
Melanoma Risk Factors

- Recognition of risk factors for melanoma may lead to the early institution of preventative measures
  - Excessive sun exposure
  - Severe sunburns during childhood
  - Fair skin that burns and freckles easily
  - Light colored hair and eyes
  - Multiple nevi or atypical nevi
  - Family history of melanoma
  - DNA repair defects
  - Chronic immunosuppression


ABCDE of Melanoma

- **ASYMMETRY**
  - One half does not match the other half

- **BORDERS**
  - Irregular
  - The edges are ragged, notched, or blurred

- **COLOR**
  - Varied color from one area to another
  - Multiple shades of tan, brown, black, white, red, or blue

- **Diameter**
  - Diameter larger than the diameter of a pencil eraser or 6 mm

- **EVOLUTION**
  - Change over time
Melanoma in Children

- Uncommon malignancy in childhood
  - 1-4% of all melanomas reported to the National Cancer Institute Surveillance Epidemiology & End Results (SEER) database occur in children under 19 years of age
    - Incidence of pediatric melanoma is increasing yearly
  - Children age 0-14 years estimated annual incidence of 0.5 per 100,000
  - Children age 15-19 years estimated annual incidence 1.7 per 100,000
    - Incidence of pediatric melanoma increases around adolescence


Melanoma in Children

- Children with melanoma have higher rates of lymph node metastases than adults with melanoma, but equal or better survival
  - Younger patients may have a different biologic form of melanoma
- Prepubertal children (compared to adolescents) with melanoma are more likely at diagnosis to have
  - Thicker tumors
  - Lymph node metastases
  - Spitzoid type tumors
  - Darker skin tones (be non-white)


Melanoma in Children

- Childhood melanoma may clinically present differently than adult melanoma
  - Amelanotic (non-pigmented)
    - Red/pink in appearance with color uniformity
  - Nodular (raised) lesions with rapid growth
    - Lesion developed de novo
    - Ulcerated
    - Can be any size small or large
  - Lesions maybe symptomatic
    - Bleeding
    - Itchy

**Additional ABCD’s of Pediatric Melanoma**

- Detecting pediatric melanoma using the conventional ABCDE melanoma criteria may be inadequate
- Additional “kid friendly” melanoma ABCD criteria was recently proposed to be used *in conjunction* with the existing melanoma criteria


**Additional ABCD’s of Pediatric Melanoma**

- Amelanotic (not pigmented)
- Bleeding, bump
- Color uniformity
- De novo, any diameter

**The Sun’s Rays**

- A significant amount of one’s lifetime sun exposure occurs before age 18
- More than 3.5 million new cases of skin cancer will be diagnosed in the US in 2013
  - 1 in 5 Americans will develop some form of skin cancer during their lifetime
- Primary care providers can play an important role in counseling patients & parents about photoprotection

http://www.aad.org/media-resources/stats-and-facts/conditions/skin-cancer
Ultraviolet Radiation (UVR)

- Sunlight is composed of visible & invisible rays
  - UVB (290-320 nm)
  - UVA (320-400 nm) - deeper penetration
- Ultraviolet radiation is a known carcinogen
- UVA is more abundant in sunlight than UVB
- Both UVA & UVB are responsible for cellular DNA damage
  - Cause sunburns (UVA) and sunburns (UVB)
  - Cause wrinkling and skin cancer

Indoor Tanning

- Fast growing industry
- 30+ million consumers
- 10% of adolescents tan indoors
  - Mainly females
- Average number of indoor tanning facilities may exceed the number of Starbucks® & McDonald’s® in large US cities
- Estimated annual revenues exceed $5 billion

Risks of Indoor Tanning

- Tanning beds usually emit UVA & some UVB
  - Cutaneous and corneal burns
  - Premature aging of the skin
  - Now considered carcinogen by WHO
  - Increased risk of skin cancer
  - Non-melanoma & melanoma skin cancer

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References:
Vaidehi AC et al. Use of tanning, sunburning rates, and tanning bed use among more than 10,000 US children and adolescents.

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References:
Geller AC et al. Use of sunscreen, sunburning rates, and tanning bed use among more than 10,000 US children and adolescents.

Melanoma & Indoor Tanning

- Systematic review & meta-analysis of published studies found an association between melanoma & indoor tanning in 2007
- Two recent population-based case control studies
  - Skin Health Study of Minnesotans 25-59 yrs diagnosed with melanoma compared to controls
    - Confirmed indoor tanning use is a risk factor for melanoma
    - Risk increases with frequency of use
  - Australian Melanoma Family Study of Australians diagnosed with melanoma between 18-39 yrs compared to controls
    - Confirmed indoor tanning use is associated with increased risk of early onset melanoma (between 18-29 yrs)
    - Risk increases with greater use and earlier age at first use


Youth Access Regulations

- Operators of indoor tanning salons are regulated at the state level or not at all
- Only 32 states have any regulations regarding youth indoor tanning
  - Includes banning use to minors under a certain age and/or required parental consent for minors
  - Low rates of enforcement of indoor tanning laws
  - Ideally want complete ban for individuals under 18
- Kansas and Missouri have NO laws


MO Indoor Tanning Facilities

- Recent study of indoor tanning facilities in Missouri determined the majority of operators misinformed consumers
  - 80% claimed indoor tanning would prevent future sunburns
  - 43% claimed there was no risk associated with indoor tanning
- 65% of operators (243 total) would allow children 10 or 12 years of age to indoor tan

2011 AAP Policy Statement on UVR Recommendations

- Pediatricians should incorporate advice about UVR exposure into health supervision practices
  - Incorporate into at least 1 health maintenance visit per year beginning in infancy & refocus again at 9-10 years
- Advice about UVR exposure is especially important for high risk children & their families
  - Fair skin, multiple nevi, family history of melanoma
- Sunscreen should be used if a child may sunburn
- Infants <6 months of age should be kept out of direct sunlight & covered with protective clothing
  - Parents may apply sunscreen to limited areas when sun avoidance is impossible


2011 AAP Policy Statement on UVR Recommendations

- Outdoor physical activity in a sun-safe manner should be strongly encouraged
- Pediatricians should advise patients to limit sun exposure if taking/using photosensitizing meds
- Guidelines regarding Vitamin D supplementation for infants and children should be followed
  - 400 IU of Vitamin D daily
  - Deliberate UVR exposure with the goal of increasing Vitamin D concentrations should be avoided
- Pediatricians should support and advocate for legislation to ban access to tanning parlors for children <18 years of age


2011 AAP Policy Statement on UVR Recommendations

- Federal, state, & local governments should:
  - Raise awareness about the dangers of exposure to artificial sources of UVR and overexposure to the sun
  - Support and disseminate successful educational UVR safety programs to schools
  - Work toward passing legislation to ban minors’ access to tanning salons
    - Governments should work to ensure that such legislation is enforced

**UVR Protection Education**

- [http://www.skincancer.org/](http://www.skincancer.org/)
  - Skin Cancer Foundation Sun Smart U educational programs for schools/teachers
- [http://www.aad.org/for-the-public/home](http://www.aad.org/for-the-public/home)
  - American Academy of Dermatology information
- [http://www.epa.gov/sunwise/](http://www.epa.gov/sunwise/)
  - EPA SunWise Program

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